MINORITY HEALTH IN WISCONSIN

Toward a Healthy Diversity

Center for Health Statistics
Division of Health
Wisconsin Department of Health and Social Services

April 18, 1994

ERRATA

Minority Health in Wisconsin: Toward a Healthy Diversity

Page xxi	First paragraph, fourth line: The rate of death among 1-17-year-old African Americans should read: 62 per 100,000.
Page 9	Table 6, Column 5: The number of Thai should read: 502
Page 15	Second paragraph, and Table 8: The age-specific mortality rate among blacks aged 1-17 should read: 62 (70 among males and 54 among females).
Page 100	Figure 2: The age-specific rate of death from all causes among black children aged 1-17 should read: 62.

MH9 ID329

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Office of Minority Health
Resource Center
PO Box 37337
Washington, DC 20013-7337

1993

Center for Health Statistics
Division of Health
Wisconsin Department of Health and Social Services

Library of Congress Catalog Card Number: 93-61571

About the Cover:

The photograph on the cover depicts a quilt, "Our Community: A Patchwork of People," made in 1991 by the children of Hawthorne Elementary School, Madison, Wisconsin. The project to design and make the quilt was directed by artist-in-residence Georgellen Mikkelson and Hawthorne art teacher Katie Mead; it was funded by a grant from the Madison Committee for the Arts (now renamed Madison CitiArts). Eleanor Cautley photographed the quilt.

Foreword

Community groups, advocates, state program staff, and others have expressed a desire for information about health needs in Wisconsin's minority populations. Accordingly, this report has been produced in collaboration with these groups and others interested in putting the information to use in improving minority health. It is becoming ever more important to distribute existing health care resources most effectively. In this context, it grows increasingly crucial to determine which health programs and which program characteristics will be most beneficial to improving health status in the state.

This report was prepared in the Wisconsin Center for Health Statistics (Ray Nashold, Director; Carol Getts, Deputy Director). Patricia Nametz had primary responsibility for researching and writing the report. Patricia Guhleman analyzed U.S. Census data and wrote most of the chapter on population characteristics, and Susan LaFlash researched and wrote initial drafts of the chapters on infants and children. Laura Harms constructed the minority health hospital data base and calculated the hospitalization and mortality rates cited in the report. Michael Soref provided data from birth certificates and the matched file of infant deaths. Data from the Family Health Survey and Behavioral Risk Factor Survey were supplied by Eleanor Cautley and Fred Krantz. Robert Adler produced the maps, and Jan Silbaugh provided graphics. Word processing, design and text layout were produced by Laura Stephenson-Vine. Sandra Breitborde, Chief of the Health Data Analysis Section, provided overall supervision of the report's preparation.

Funds for the preparation of this report were provided under contract with the Bureau of Public Health and the Bureau of Health Care Financing, partly supported by federal block grant monies. Draft sections of the report were reviewed by representatives of the contracting bureaus. In the Bureau of Public Health, persons supplying comments and/or information included Richard Aronson, M.D., Susan Bulgrin, Millie Jones, Jeffrey Davis, M.D., James Vergeront, M.D., Lori Amsterdam, Tony Wade, Fred Appleton, Mary Proctor, Henry Anderson, M.D., Jody Diedrich, Barbara Chatterjee, Nancy Chudy, and Warren LeMay, D.D.S. In the Bureau of Health Care Financing, Eileen McRae and Kevin Piper provided review and comments. Review and comments on the population characteristics chapter were provided by Doris P. Slesinger, Professor in the Department of Rural Sociology, University of Wisconsin-Madison. Alexandra Wright of the Bureau on Aging, Division of Community Services, reviewed the chapter on older adults and the census data pertaining to the 65-and-over population.

Staff in the Bureau of Public Health provided the numbers of reported cases of selected communicable diseases in Wisconsin, including vaccine-preventable diseases, sexually transmitted diseases, tuberculosis, and AIDS; the Bureau of Public Health also provided information about the prevalence of lead exposure in Wisconsin.

This report includes descriptions of programs in Wisconsin that address some of the health problems identified in the analysis. The programs described are examples only; an exhaustive list of all programs was not attempted. In most instances, program information was supplied directly by program staff.

An advisory committee appointed by Ann J. Haney, Administrator of the Division of Health, assisted in planning the report and reviewing drafts. (A list of committee members appears in Appendix 1.) The Center for Health Statistics would like to thank the members of the committee for their valuable contributions to the report.

Comments and requests for additional information may be addressed to the Center for Health Statistics, Wisconsin Division of Health, P.O. Box 309, Madison, Wisconsin 53701-0309.

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INTRODUCTION AND SELECTED FINDINGS

Introduction

Minority populations in Wisconsin are growing in size and diversity, contributing to the changing demographic profile of the state. This report, **Minority Health in Wisconsin: Toward a Healthy Diversity**, provides information concerning the health status of minority populations in Wisconsin. Such information is needed to address the health needs of Wisconsin residents at the local, regional, and state level. The information in this report should also be useful to program agencies and other groups as they seek to prevent disease and promote health in their communities.

Organization of the Report

Although this report focuses on information about racial and ethnic minorities, the basic health issues and concerns presented here occur in a universally shared context of the successive developmental stages of life. Thus, all babies are completely dependent on their parents and other adults for care and nurturing; children need help to grow and develop social and intellectual skills; young people increasingly want independence but need guidance from family and community in achieving it; adults have increasing responsibility for children and families and for building their communities; older adults play an important role in fostering new generations and transmitting their hard-earned wisdom and cultural traditions.

As these developmental milestones are similar yet subtly different according to individual outlook and shared culture, so health concerns and issues at each age are often quite similar, regardless of racial or ethnic background. Consequently, this report is organized into chapters according to the following stages in the life cycle:

1) **Birth and infancy** (the prenatal period and babies less than one year of age),

2) **Children and youth** (ages 1-17),

3) **Young adulthood and middle age** (ages 18-44 and 45-64), and

4) **Older age** (ages 65 and over).

Within each chapter, information about common health problems is presented in the context of findings from prevention-oriented studies. The chapter on birth and infancy addresses such issues as infant mortality, low birthweight, and prenatal care. The next chapter examines injuries, immunizations, lead poisoning, and other health issues important among children and teenagers. The chapters concerning adults present information about health risk factors, chronic disease, unintentional and intentional injuries, and infectious diseases. Throughout the report, examples are included of the prevention and health promotion efforts underway in Wisconsin communities.

Before the age-specific chapters, an overview is presented of some of the population characteristics that affect health, based on Wisconsin data from the 1990 U.S. Census. Finally, reference tables (summary information for all population groups) are presented in Appendix 2; Technical Notes are in Appendix 3.

Most sources of data used in this report provide information for broad racial/ethnic groupings (American Indians, Asians, African Americans, Hispanics). In many cases there are too few events (such as deaths) to divide them into more precise racial/ethnic groups; additionally, most data sources do not collect data at this level of precision (see Appendix 3). More detailed information is provided wherever possible; for example, in the population characteristics chapter. The reader should keep in mind the diversity that exists within each of the minority populations for which information is presented. Any group is a collection of individuals. Wide variations among individuals in every group exist for every measurable health-related condition, outcome and event. Thus, information about rates of heart disease or other health conditions relate only to the proportion or rate of the particular problem within the group: many individuals in that group do not experience the problem or condition.

Comparisons

In general, findings for each racial/ethnic population are compared to findings for the Wisconsin population as a whole, both to provide a context for the information and to give the reader some sense of when a health condition may be of particular concern to a given group. The total Wisconsin population was used as a point of comparison to avoid implying that a specific racial/ethnic group should be used as a "standard." Consequently, differences comparing one segment of the Wisconsin population (a particular racial or ethnic group) to the total state population will appear less striking since the group is also part of the total. (When national mortality rates by race/ethnicity are presented in this report, data for the total U.S. population is also presented when available; data for the U.S. white population is presented when U.S. totals were not available.)

Much of the information presented in this report consists of mortality rates for various causes of death, and the rates of hospitalization for various diagnoses. (Rates are the number of events per specified number of population.) When possible, findings are analyzed for particular age groups and by sex, because these factors affect the likelihood of many kinds of health-related conditions and events (such as a hospitalization for injuries, or a death from lung cancer). Age is such a strong factor in health, in fact, that it is often necessary to account for the differences in age distribution of the communities to be compared. For example, the most common form of diabetes is found much more often among middle-aged and older people. Consequently, if a particular group has a high proportion of children and young adults, reporting the simple rate of hospitalization or death from diabetes for that population would underestimate the risk of diabetes for this group.

Accordingly, the death rates and hospitalization rates reported in this publication are of two kinds, both of which take into account the younger age structures of minority populations:

> 1) **Age-specific rates** are the actual rates experienced in a relatively narrow age group (e.g., 18-44), so that differences in the age structures of the populations to be compared do not affect the rates. Any age-specific rate can be directly compared to any other rate for the same age group.
>
> 2) **Age-adjusted rates** are summary index measures that enable one to examine the comparative likelihood of experiencing a condition in two populations despite differences in their age structures. Age-adjusted rates have meaning only as points of comparison to other rates that have been adjusted in the same way.

Sources of Data

The sources of data for this report are primarily those that provide population-based information. They address the occurrence of a health event or condition in the entire population, rather than in a self-selected group such as the users of a particular program or care provider. These sources of data include:

- 1990 U.S. Census information for Wisconsin.
- Birth certificates for all live births to Wisconsin residents during 1991.
- A matched file of infant death certificates and the corresponding birth certificates for the years 1987-1991.

- Death certificates for all deaths occurring among Wisconsin residents during the five years 1987-1991.
- Hospitalization data based on all discharges of Wisconsin residents from Wisconsin hospitals during seven quarters of 1990-1992 (collected by the Office of Health Care Information).
- The Prenatal Care Study, a sample survey of mothers who gave birth in Wisconsin in 1990.
- The Family Health Survey, a telephone survey of Wisconsin households.
- The Wisconsin Behavioral Risk Factor Survey, a telephone survey of Wisconsin households that is conducted as part of a national survey.
- The Wisconsin Cancer Reporting System, which collects information about newly diagnosed or admitted cancer cases from hospitals and other facilities.
- Reportable disease programs in the Bureau of Public Health.

More detailed information about the sources of data used in this report is contained in Appendix 3.

Most rates are based on 1990 U.S. Census population counts for Wisconsin, and are expressed as the number of events per 10,000 or per 100,000 population. The exception is the data for infants, which are reported in the conventional manner, expressed as the number of events per 1,000 live births.

Unless otherwise noted, the racial/ethnic categories used in this report are mutually exclusive: data for Hispanics are analyzed separately, and the other categories are non-Hispanic blacks, American Indians, and Asians.

Selected Findings: Population Characteristics

- From 1980 to 1990, Wisconsin's ethnic and racial minority populations increased both in numbers and as a proportion of all residents of the state. While the total Wisconsin population increased during the decade by 4 percent, both the black population and the American Indian population grew by 33 percent, the Asian population by 146 percent, and the Hispanic population by 48 percent.

- In 1990, minorities constituted 8.7 percent of the state population: blacks constituted 4.9 percent, American Indians 0.8 percent, Asians 1.1 percent, and Hispanics 1.9 percent.

- Owing to comparatively rapid population growth among Hispanics and Asians in Wisconsin, African Americans constituted a smaller proportion of the state's minority population in 1990 (57 percent) than they did in 1980 (61 percent).

- Hispanics in Wisconsin are a diverse population: 62 percent identify themselves as Mexican American, 20 percent as Puerto Rican, 2 percent as Cuban, and 16 percent as other Hispanic.

- American Indians in Wisconsin include several distinct nations: the Chippewa (Ojibwa), Oneida, Winnebago, Menominee, Stockbridge-Munsee, and Potawatomi.

- Southeast Asian groups account for about 45 percent of all Asians in Wisconsin. About 70 percent of the Southeast Asian population are Hmong; 15 percent are Laotian; 11 percent are Vietnamese; and 4 percent are Thai or Cambodian.

- Minority populations in Wisconsin have comparatively young age structures. The median age (age at which half the population is younger and half is older) is 32.9 for the state population as a whole, but 23.4 for blacks, 24.5 for American Indians, 21.3 for Asians, and 21.9 for Hispanics.

- The youngest median age is found among the state's Hmong residents, who have a median age of 12.5. In 1990, 61 percent of the Hmong population in Wisconsin was less than 18 years of age.

- Contributing to the young age structures of minority populations are comparatively high birth rates (births per 1,000 women aged 15-44). In 1990, the birth rate for Wisconsin as a whole was 64 births per 1,000 women; the comparable rate was 111 per 1,000 among blacks, 86 per 1,000 among American Indians, 86 per 1,000 among Hispanics, and 265 per 1,000 among Southeast Asians.

- These 1990 birth rates imply the following total number of children per woman: 1.8 statewide, 3.1 for African Americans, 2.4 for American Indians, 2.3 for Hispanics, and 7.7 for Southeast Asians.

- During the 1987-1991 period, age-specific mortality rates were generally highest for Wisconsin's black population, followed by the American Indian population. Mortality rates were lowest for the Asian and Hispanic populations.

- The markedly lower death rates among Asians in Wisconsin are consistent with national findings. In contrast, the low death rates among Hispanics in Wisconsin are not seen in national data. Hispanic death rates would appear artifactually low if Hispanic ethnicity was underreported on death certificates.

- Minority populations in Wisconsin are geographically diverse. Most of the black population lives in a few metropolitan areas in the state. In contrast, the American Indian population is about equally divided between metropolitan and nonmetropolitan counties. The state's Asian population is largely metropolitan overall, but distinct geographical residential patterns exist for the different Southeast Asian national-origin groups. National-origin groups within the Hispanic population, also largely metropolitan, are more dispersed across the state.

- In 1990, 97 percent of all Wisconsin blacks lived in one of five counties: 80 percent in Milwaukee, 7 percent in Racine, 4 percent in Dane, 3 percent in Rock, and 2 percent in Kenosha.

- About 60 percent of American Indian residents live in the northeastern and northern regions of the state. Statewide, about one-third (32 percent) of the American Indian population lives on one of 11 reservations or trust lands.

- About half (49 percent) of Wisconsin families statewide are families with children; the proportion of families with children is two-thirds or more among African American families (67 percent), American Indian families (66 percent), Asian families (73 percent), and Hispanic families (70 percent).

- An increasing proportion of Wisconsin children (less than 18 years of age) are living in female-headed families. In 1990, 15 percent of children statewide were living in female-headed families. The corresponding proportion was 55 percent among black children, and 32 percent among American Indian children. The proportion was 25 percent among Mexican-origin children, 39 percent among Puerto Rican-origin children, 35 percent among Cuban-origin children, and 22 percent among children of other Hispanic origin. Among Southeast Asians, the proportion ranged from 7 percent of Hmong children to 23 percent of Cambodian children.

- In 1990, living arrangement patterns among older adults (65 and over) in Wisconsin varied according to race/ethnicity. Nevertheless, the most common arrangement in all groups was living with a spouse or other relative: this was the living arrangement for a majority of those 65 and older in every racial/ethnic group. This was also true across age subgroups of the older population, except for the oldest (85 and over); in general, it was these oldest elderly that had the greatest variation in living arrangements.

- Among all persons aged 85 and over, only 29 percent were living with family members; the pattern was distinctly different among minority groups examined. Roughly half of African Americans, American Indians, and Hispanics aged 85 and over were living with family members; the proportion was even higher among Asians (66 percent). In general this difference reflects lower levels of nursing home use among the oldest members of minority groups, compared to the total 85-and-over population.

- The proportion of older adults living alone varied in most racial/ethnic groups between 21 and 38 percent, depending on age. The exception was among Asian older adults, who had markedly lower rates of living alone in every age subgroup; just 8 percent of 85-and-older Asians were living alone in 1990, compared with 37 percent in the total 85-and-over population.

- In 1990, 11 percent of all persons in Wisconsin were poor. In comparison, 41 percent of the black population, 35 percent of the Native American population, and 41 percent of the total Asian population had incomes below the official poverty lines. The poverty rate for the total Hispanic population (27 percent) was lower than for other minority groups, but more than two-and-a-half times the state average.

- In 1990, three-fourths of all Wisconsin children in poverty were white; nevertheless, children in minority groups were much more likely to be poor. For example, while 18 percent of all Wisconsin children under five years of age were living in poverty, the corresponding proportion was 62 percent of black children, 55 percent of American Indian children, 55 percent of Asian children, and 40 percent of Hispanic children.

- Although the statewide poverty rate increased only slightly during the 1980s (from 9 percent in 1980 to 11 percent in 1990), poverty rates among minority populations in the state increased markedly. The 1990 black poverty rate of 41 percent was 12 percentage points higher than ten years earlier, when it was 29 percent. The poverty rate among American Indians in Wisconsin increased from 23 percent in 1980 to 35 percent in 1990. Among Asians, the poverty rate increased from 21 percent in 1980 to 41 percent in 1990 (with much higher rates in those counties where Hmong and Laotians represent most of the Asian population). Among Hispanics, the 1990 poverty rate increased from 19 percent in 1980 to 27 percent in 1990.

Selected Findings: Prenatal and Infant Health

♦ In Wisconsin, women in ethnic and racial minorities are less likely to begin care in the first trimester of pregnancy and tend to make fewer prenatal visits, compared to statewide percentages.

♦ Among Wisconsin women who gave birth in 1991, 81 percent began prenatal care in the first trimester, 76 percent made 10 or more visits, and 30 percent made 13 visits as recommended by the American College of Obstetricians and Gynecologists. No minority group in Wisconsin approached those levels of care.

♦ First-trimester care was received by 58 percent of African American women, 61 percent of American Indians, 65 percent of Hispanics and 39 percent of Southeast Asians. Similarly, 51 percent of blacks, 50 percent of American Indians, 62 percent of Hispanics and 33 percent of Southeast Asians made 10 or more prenatal care visits. Sixteen percent of black and American Indian women, 20 percent of Hispanic women, and 7 percent of Southeast Asian women achieved the ACOG goal of 13 prenatal care visits.

♦ Even when prenatal care is initiated in the first trimester, minority women tend to have fewer prenatal visits. Among all Wisconsin women whose prenatal care began in the first trimester, 85 percent made 10 or more prenatal care visits; the comparable proportion was 70 percent of American Indian women, 60 percent of Southeast Asian women, 71 percent of black women, and 81 percent of Hispanic women.

♦ In 1991, about 4 percent of all women who gave birth in Wisconsin received late (third-trimester onset) or no prenatal care, while the percentages of minority women with late or no prenatal care ranged from 9 to 13 percent.

♦ In 1991, black infants in Wisconsin were born with low birthweight (less than 2,500 grams or about 5.5 pounds) at more than twice the rate for all births in the state (14.2 percent vs. 6.2 percent), and were almost three times as likely to be born at very low birthweight (less than 1,500 grams or about 3.3 pounds) (2.9 percent vs. 1.1 percent).

♦ Infants born to Hispanic and Southeast Asian mothers had slightly higher rates of low birthweight (6.7 percent in each group) than did all infants, but were close to the state rate for very low birthweight (1.0 percent each). Infants born to American Indian mothers in Wisconsin had a low birthweight proportion below the state average (4.9 percent).

♦ While 9 percent of all births in 1991 were pre-term (less than 37 weeks gestation), the percentage was 20 percent among African Americans, 13 percent among Southeast Asians, 11 percent among Hispanics, and 8 percent among American Indians.

♦ Four percent of Wisconsin births in 1991 were to mothers less than 18 years of age. A higher proportion of black mothers were in this group (14 percent) followed by Hispanics (10 percent), American Indians (8 percent) and Southeast Asians (7 percent).

♦ In 1991, 25 percent of Wisconsin births were to unmarried women. The percentage of nonmarital births varied by race and ethnicity: 83 percent of births to African American women, 63 percent of births to American Indian women, 45 percent of births to Hispanic women, and 8 percent of births to Southeast Asian women.

♦ In Wisconsin in 1991, 17 percent of women giving birth had less than a high school education. Compared with this overall percentage, higher proportions of minority women who gave birth in 1991 had less than a high school education. The highest proportion of births to women who had not completed high school was found among Southeast Asian women (80 percent), followed by Hispanic women (50 percent), black women (47 percent), and American Indian women (43 percent).

- Twelve percent of Wisconsin births in 1991 represented the mother's fourth or higher birth. The proportion of births in this category was higher among Wisconsin minorities: 63 percent of Southeast Asian births (65 percent of Hmong births); 20 percent of black births; 22 percent of American Indian births; and 17 percent of Hispanic births.

- Births to minority women in Wisconsin were more closely spaced than births in the state as a whole. Of all Wisconsin women giving birth in 1991, 17 percent had experienced another birth within the previous 24 months. The proportion was 56 percent among Southeast Asian women (58 percent among Hmong women); 29 percent among black women; 25 percent among American Indian women; and 24 percent among Hispanic women.

- Birth certificate data indicate that about 23 percent of Wisconsin women who gave birth in 1991 smoked during their pregnancy. American Indian women had the highest reported rate (48 percent), followed by black women (28 percent), and Hispanic women (17 percent). Smoking was reported by less than 1 percent of Southeast Asian women who gave birth (0.4 percent).

- Based on the five most recent years of data (1987-1991), infant mortality rates in Wisconsin vary considerably by race/ethnicity. The overall infant mortality rate in Wisconsin for 1987-1991 was 8.6 deaths per 1,000 live births. African Americans and American Indians in Wisconsin had infant mortality rates higher than those of the general population; in 1987-1991, the mortality rate for black infants in Wisconsin was 17.4 deaths per 1,000 live births; for American Indian infants the rate was 15.2. The infant mortality rate among Southeast Asians (8.3 per 1,000 live births) and the rate among Hispanics (8.1) were similar to the statewide rate.

- In Wisconsin during 1987-1991, the neonatal mortality rate (reflecting deaths in the first 28 days of life) among black infants was 9.6 deaths per 1,000 live births, a rate markedly higher than the statewide neonatal mortality rate (5.2). American Indian infants (6.7) and Southeast Asian infants (5.5) also had neonatal mortality rates higher than the state rate. The neonatal mortality rate among Hispanic infants (4.7) was lower than the statewide rate.

- In 1987-1991, American Indians and blacks in Wisconsin had relatively high rates of postneonatal mortality (8.5 and 7.9 deaths per 1,000 live births, respectively). The postneonatal mortality rate among Hispanic infants (3.4) was similar to the state rate (3.5). There were too few postneonatal deaths among Southeast Asians during this period to report a rate.

Selected Findings: Children and Youth, Ages 1-17

♦ During 1987-1991, the age-specific mortality rate among all Wisconsin children and youth aged 1-17 was 35 deaths per 100,000 population; this rate includes deaths from all causes. The rate of death among 1-17-year-olds varied by race/ethnicity: 45 per 100,000 among American Indians, 38 per 100,000 among Asians, 79 per 100,000 among African Americans, and 16 per 100,000 among Hispanics. (Low death rates among Hispanics of all ages in Wisconsin may reflect underreporting of Hispanic ethnicity on death certificates.)

♦ Within the population aged 1-17, mortality rates differed by age subgroup. The age-specific mortality rate among all children ages 1-11 was 29 deaths per 100,000 population. Among children aged 1-11, the mortality rate was 39 per 100,000 among Asian children, 61 per 100,000 among African American children, and 16 per 100,000 among Hispanic children. Too few deaths occurred among American Indian children ages 1-11 to report a mortality rate.

♦ Youth aged 12-17 have a higher mortality rate than younger children; in 1987-1991 the mortality rate among Wisconsin youth aged 12-17 was 47 deaths per 100,000 population. The mortality rate among African Americans in this age group was 63 per 100,000, about 1.5 times the rate for the age group as a whole. Too few deaths occurred in each of the other racial/ethnic minority groups to report rates.

♦ In 1987-1991, Wisconsin children aged 1-17 experienced a mortality rate from all injuries (unintentional and intentional combined) of 21 per 100,000 population. American Indian children (30 deaths per 100,000) and African American children (40 deaths per 100,000) died from injuries at higher rates than did children as a whole. Asian children in the state experienced a death rate (19 per 100,000) more similar to that for all children, and the Hispanic rate was somewhat lower (14 per 100,000).

♦ Hospitalizations for injuries among Wisconsin children aged 1-17 occurred in 1990-1992 at the overall rate of 54 hospitalizations per 10,000 children. Only black children experienced injury hospitalizations at a higher rate (90 per 10,000) than the age group as a whole.

♦ In 1987-1991, motor vehicle injury, fires, and drowning were the most common sources of fatal unintentional injury among children. Compared with the rate for all children (16 per 100,000), the mortality rate from unintentional injury was higher among black children (22 per 100,000) and Asian children (19 per 100,000). The rate was lower among Hispanic children (11 per 100,000). There were too few deaths from unintentional injury among American Indian children ages 1-17 (an average of 3 per year) to present a rate.

♦ Black children ages 1-17 died from motor vehicle injuries at a lower rate (4.4 deaths per 100,000) than did the 1-17-year-old population as a whole (9.3 per 100,000). The numbers of deaths among other racial/ethnic minorities were too small to present rates: American Indians, Asians, and Hispanics each experienced an average of 2 deaths per year from motor vehicle injuries among children aged 1-17.

♦ Fire deaths in the 1-17 age group are concentrated among younger children, aged 1-11. During the years 1987-1991, the rate of death from fire among children aged 1-11 in Wisconsin was 2.9 deaths per 100,000 population. Nearly half the deaths in the 1-11 age group (about 10 per year) occurred among African American children, who died from fires at the rate of 16.1 deaths per 100,000 population. This was over five times the rate found in the total population of children aged 1-11. American Indian children and Hispanic children each averaged 1 death per year from fire; this was too small a number to present a rate. During the five-year period, the yearly average number of fire deaths among Asian children in the state was zero.

♦ During 1987-1991, an average of 16 Wisconsin children aged 1-11 drowned each year; this resulted in a mortality rate of 2.0 per 100,000 population. An average of 7 drownings per year occurred among youth aged 12-17, for a mortality rate of 1.7 deaths per 100,000. There were too few drowning deaths to determine mortality rates by race (an average of 3 deaths yearly among African American children, and virtually no drowning deaths reported among American Indian, Asian, or Hispanic children).

- Among 12-17-year-olds, an average of 13 deaths each year in 1987-1991 were attributed to homicide; these deaths constituted about 7 percent of all deaths in the age group. The age-specific death rate from homicide among youth aged 12-17 was 3.2 deaths per 100,000 population. The rate among African American youth aged 12-17 (31.4 per 100,000) was markedly higher than for all youth aged 12-17. During this five-year period, there were too few deaths attributed to homicide among Asian, American Indian, or Hispanic youth to present rates (1 death in each group during the five-year period).

- In 1990-1992, Wisconsin children aged 1-11 were hospitalized with a principal diagnosis of asthma at the rate of 27 hospitalizations per 10,000 children. Compared with the rate among all children, the asthma hospitalization rate was markedly higher among African American children (110 per 10,000). Hispanic children also experienced a somewhat higher rate (31 per 10,000). Asthma hospitalizations occurred at a lower-than-statewide rate among American Indian children (19 per 10,000) and Asian children (12 per 10,000).

- Overall, the rate of hospitalization for asthma among 12-17-year-olds (13 per 10,000) was about half the rate among younger children. This was true for children as a whole and for children in minority groups. Still, compared with the rate among all adolescents aged 12-17, the asthma hospitalization rate remained markedly higher among African American adolescents (47 per 10,000) and somewhat higher among Hispanic children in this age group (17 per 10,000). Too few such hospitalizations occurred among American Indian and Asian 12-to-17-year-olds to present rates.

- Lead poisoning is the leading environmental threat to Wisconsin's children. There are approximately 440,000 children under age 7 in Wisconsin. Using a national estimate that 17 percent of the nation's children are likely to have blood lead levels of 15 ug/dL or higher, an estimated 75,000 children are at risk for lead poisoning in Wisconsin.

- In Wisconsin during the 1991-92 school year, 93 percent of children entering kindergarten were fully immunized for vaccine-preventable diseases. Based on retrospective surveys done at school entry, the immunization level among 2-year-old children was 53 percent.

- While the number of Wisconsin teenagers who were members of racial or ethnic minority groups grew during the 1980s, the number of white teenagers declined. The combined effect of racial differences in both population growth and birth rates meant that births to minority-group teens accounted for a larger proportion of total teen births in 1991 (41 percent) than in 1980 (20 percent).

- In 1990, the Wisconsin teen birth rate was 44 births per 1,000 females aged 15-19. The rate was 179 per 1,000 among African American teens, 91 per 1,000 among American Indian teens, 98 per 1,000 among Mexican American teens, 121 per 1,000 among Puerto Rican teens, 43 per 1,000 among Cuban teens, 38 per 1,000 among other Hispanic teens, 121 per 1,000 among all Southeast Asian teens, and 225 per 1,000 among Hmong teens.

- A 1991 survey of middle and high school students in the greater Milwaukee area found that African American students and Asian students were least likely to report daily use of tobacco products (3 percent in each group), and most likely to report no use of tobacco during the past year (79 percent each). White students (12 percent) and American Indian students (11 percent) were most likely to report daily use of tobacco products, and least likely to report no use of tobacco during the past year (62 percent and 64 percent, respectively). Results for Hispanic students fell between these two comparative extremes.

- There were large differences among Milwaukee-area high school students in the proportion who reported never using drugs (neither tobacco, alcohol, nor any illicit drug). Overall, 27 percent of high school students reported being non-users. Asian students (43 percent) and African American students (35 percent) were most likely to report being non-users, while white students (20 percent) and American Indian students (21 percent) were least likely. Thirty-two percent of Hispanic students reported being non-users of tobacco, alcohol and other substances.

Selected Findings: Adults Ages 18-44 and 45-64

- While household survey results for 1987-1991 suggest that 30 percent of men and 28 percent of women in Wisconsin smoke cigarettes, the estimated proportion of smokers was 51 percent among black men, 34 percent among black women, and 35 percent among Hispanic men and women combined. No survey estimate of smoking prevalence was available for American Indians in Wisconsin; however, their high rates of death from coronary heart disease may indicate high rates of smoking.

- Based on self-reported weight and height survey data for 1987-1991, blacks in Wisconsin have a higher prevalence of overweight than does the population of the state as a whole. While survey results suggest that the prevalence of overweight among Hispanics in Wisconsin is similar to that for the total population, this finding is based on a small sample and differs from national data. High rates of death and hospitalization for diabetes indicate that obesity may be a particular problem among some Indian communities in Wisconsin.

- Household survey data provides self-reported information about several measures of alcohol-related risk in the Wisconsin population: "chronic drinking" (60 or more drinks in a month), "episodic drinking" (five or more drinks on an occasion), and "drinking and driving" (driving after having too much to drink). By all these measures, rates of alcohol use are lower among blacks of both sexes in Wisconsin, compared with the population as a whole. Hispanics (both sexes combined) report a lower rate of alcohol use than does the total population, but similar rates of episodic drinking and "drinking and driving."

- In 1987-1991, age-adjusted mortality rates from chronic liver disease and cirrhosis were higher among American Indian males, Hispanic males, and blacks of both sexes, compared to rates in the total state population. Rates of hospitalization for alcohol and other drug abuse were also higher among blacks and American Indians in Wisconsin, compared with the state population as a whole.

- Data for the years 1987-1991 from the Behavioral Risk Factor Survey provide some confirmation that hypertension is a particular problem for blacks in Wisconsin. Sixteen percent of black males aged 18-64 had been told more than once by a doctor that their blood pressure was high; this compares with 13 percent of all males in the state (the difference was not statistically significant, however). There was a marked difference among women: 22 percent of black women aged 18-64 had been told more than once that their blood pressure was high, compared with 10 percent of all women.

- The prevalence of hypertension among various racial and ethnic groups in Wisconsin can also be inferred from mortality rates for stroke. Wisconsin death certificate data indicate higher rates of death from stroke among blacks of both sexes, compared with the population as a whole. American Indian men in Wisconsin also appear to have a higher rate of stroke death.

- Wisconsin death certificate data for 1987-1991 indicate that American Indians had the highest overall age-adjusted rate of death from coronary heart disease (295 per 100,000 population); the death rate among blacks (242) was also higher than for the total population (227). Hispanics died from CHD at a strikingly lower rate (94 per 100,000 population); the rate was even lower among Asians (64 per 100,000).

- In the Wisconsin population as a whole, males had a higher rate of death from coronary heart disease. This pattern varied by racial/ethnic group, however, reflecting high rates of death from this cause among American Indian and African American women.

- In 1990-1992, blacks in Wisconsin were hospitalized with a diagnosis of coronary heart disease at a higher age-adjusted rate (77 per 10,000 population) than the statewide rate (67 per 10,000). Asian Americans were hospitalized with this diagnosis at a markedly lower rate, 16 per 10,000. The remaining population groups had roughly equivalent age-adjusted hospitalization rates: 54 per 10,000 among American Indians, 56 per 10,000 among Hispanics, and 56 per 10,000 among white non-Hispanics.

- Heart disease hospitalization rates were comparatively low among all young adults (aged 18-44), who were hospitalized with a principal diagnosis of coronary heart disease at an age-specific rate of 8 hospitalizations per 10,000 population. In this age group, the hospitalization rate was 8 per 10,000 among American Indians, 12 per 10,000 among blacks, and 5 per 10,000 among Hispanics. Hospitalization rates for coronary heart disease were sharply higher among adults aged 45-64: 136 per 10,000 for the age group as a whole, and 97 per 10,000 among American Indians, 32 per 10,000 among Asians, 146 per 10,000 among blacks, and 99 per 10,000 among Hispanics.

- Hospitalization rates for heart disease vary markedly by sex, especially before age 65. For males aged 45-64, the hospitalization rate for coronary heart disease was 203 hospitalizations per 10,000 persons; the comparable rate among women was 72. This difference by sex was found for every racial\ethnic group, although the high rate of hospitalizations for coronary heart disease among black and Hispanic women made the difference less striking among those groups.

- Based on death certificate data for 1987-1991, cancer deaths in Wisconsin occurred at a higher age-adjusted rate among blacks, especially black males. The higher cancer mortality among blacks reflected both higher incidence rates and lower rates of survival. American Indians in Wisconsin had a cancer death rate similar to that for the total Wisconsin population, in contrast to national statistics which show a lower rate of death from cancer among American Indians. Cancer mortality rates among Asians and Hispanics in Wisconsin appeared to be much lower than the rate for the total population.

- The overall age-adjusted rate of hospitalizations for cancer was highest among blacks (73 hospitalizations per 10,000 population). The age-adjusted rate for cancer hospitalizations was similar among Asians (26 per 10,000), American Indians (26 per 10,000), and Hispanics (29 per 10,000). Age-specific hospitalization rates for cancer were higher for blacks than the total population for both the 18-44 age group, when rates of cancer are comparatively low in all racial/ethnic groups; and the 45-64 age group, when cancer becomes more common.

- Based on 1988-1990 data from the Wisconsin Cancer Reporting System, overall age-specific incidence rates for blacks in Wisconsin were about the same as for the total state population for young adults 20 through 44 years old, and higher for adults between 45 and 74 years old (the period when most cancers are diagnosed).

- During the period 1987-1991, the rates of death from stroke were higher among blacks of both sexes and American Indian men, relative to the stroke mortality rates for the total population.

- Age-adjusted hospitalization rates for stroke (combining all ages and both sexes) were lowest among Asians (20 per 10,000 population) and Hispanics (22 per 10,000); somewhat higher among American Indians (28 per 10,000); and highest among blacks (64 per 10,000).

- Based on Wisconsin death certificate data for 1987-1991, it appears that the rate of deaths attributed to diabetes is much higher among American Indians and blacks in Wisconsin than among the population of the state as a whole. Hispanics also had a slightly higher reported rate of death from diabetes.

- For both African Americans and American Indians, diabetes mortality was especially high among women. The age-adjusted mortality rate attributed to diabetes was 29 per 100,000 among black men and 61 per 100,000 among black women. Among American Indians in the state, age-adjusted mortality rates from diabetes were 34 per 100,000 among men, and 107 per 100,000 among women. Comparable rates for the total population were 17 per 100,000 among all men and 22 per 100,000 among all women.

- Rates of hospitalization for diabetes were higher among blacks, American Indians, and Hispanics than in the Wisconsin population as a whole.

- Similar to national findings, Wisconsin death certificates for 1987-1991 show comparatively high rates of death from homicide among blacks in Wisconsin. Overall, blacks in Wisconsin died from homicide at an age-adjusted rate (36 per 100,000) about 9 times the rate in the total population (4 per 100,000). The risk was highest among black men, although blacks of both sexes were at higher risk when compared to the population as a whole.

- Hispanics in Wisconsin also died from homicide at a rate higher than expected; their age-adjusted homicide mortality rate (8 per 100,000) was about 1.75 times the expected rate. The excess mortality from homicide among Hispanics occurred entirely among men aged 18-44.

- There were too few homicide deaths among American Indians in 1987-1991 to calculate a stable mortality rate. No homicide deaths occurred among Asians in Wisconsin during the years 1987-1991.

- An examination of mortality data for the five-year period 1987-1991 showed that no minority group experienced a higher rate of suicide than either the state population as a whole or the white population.

- During the years 1987-1991, American Indians had a higher rate of death from unintentional injuries (accidents) than any other group in the Wisconsin population. Their total age-adjusted mortality rate from unintentional injuries was 71 per 100,000, twice the expected rate. Mortality rates from this cause were highest among American Indian men. The rate among American Indian men aged 45-64 (164 per 100,000) was higher than the rate among 18-44-year-old American Indian men (111 per 100,000).

- African Americans in Wisconsin also experienced a mortality rate from unintentional injuries somewhat higher than the total state rate. Their age-adjusted rate of death from unintentional injuries was 39 per 100,000. Middle-aged blacks, both men and women, died from this cause at a higher rate than did blacks aged 18-44. Black men aged 45-64 died from unintentional injuries at a rate of 68 per 100,000, or 1.8 times the rate for all men in this age group; black women aged 45-64 had an injury death rate (25 per 100,000) that was 1.6 times the rate for all women in the age group.

- Among Hispanics as a whole, the age-adjusted mortality rate attributed to unintentional injuries (19 per 100,000) was lower than for the total Wisconsin population. Most deaths from unintentional injuries among Hispanics occurred among men aged 18-44.

- The age-adjusted rate of death from unintentional injuries among Asians in Wisconsin was 22 per 100,000 population, lower than the rate in the total population.

Selected Findings: Older Adults

- Comparing all Wisconsin adults aged 65 and over, the coronary heart disease (CHD) mortality rate was lower among American Indian, African American, and Hispanic persons than in the total population. (There were too few CHD deaths among Asians aged 65 and over to present a rate.) This overall comparison, however, masks higher rates in some age subgroups, especially among the youngest elderly.

- Black women aged 65-74 (672 deaths per 100,000 population) and 75-84 (1,398 per 100,000) died from CHD at higher rates than did all women in those age groups (418 and 1,336 per 100,000). The CHD mortality rate among black males aged 65 and over was lower than the rate among all males 65 and over, at least partly owing to higher rates of premature heart disease mortality among black men at younger ages. Hospitalization rates were higher among black women and lower among black men, compared with all women and men aged 65 and older.

- Among older American Indians in Wisconsin, both men and women aged 65-74 had higher rates of CHD mortality (1,246 and 736 per 100,000, respectively) than all males and females aged 65-74 (984 and 418 per 100,000). CHD hospitalization rates for American Indians elders of both sexes were lower than in the general population.

- Although rates of death from coronary heart disease appeared to be lower in the Hispanic older population compared with all older persons in Wisconsin, rates of hospitalization were more similar. In fact, Hispanic women aged 65 and over had a higher hospitalization rate for CHD (264 hospitalizations per 10,000 population) than did all women in the age group (238 per 10,000).

- There were too few deaths and too few hospitalizations among Asian older persons to report rates of death or hospitalization from coronary heart disease.

- Compared to cancer mortality rates in the total 65-and-over population of Wisconsin, cancer mortality in 1987-1991 was lower among American Indian, Asian, and Hispanic older persons, and higher among African American older persons.

- Elderly African American men had higher cancer mortality than elderly men as a whole in two age subgroups: ages 65-74 (1,607 vs. 1,050 per 100,000) and ages 75-84 (2,488 vs. 1,836 per 100,000); only at ages 85 and above did the cancer mortality rate among all men in the age group (2,688) surpass the rate among black men (2,532). Black women had higher cancer mortality rates in every age subgroup of the older population, compared with all women in these age groups.

- Hospitalization data showed higher age-specific rates of cancer hospitalization for black elderly persons, and lower rates for American Indians, Asians, and Hispanics, compared with the total 65-and-over population.

- In general, age-specific rates of death from cerebrovascular disease (stroke) in Wisconsin were higher among American Indian and African American males aged 65 and over (475 and 452 per 100,000, respectively) compared with all males aged 65 and over (431). A lower overall rate among African American females aged 65 and over masked higher rates at ages 65-74 (181) and ages 75-84 (699), compared with all females at those ages (124 and 484 per 100,000, respectively).

- Compared with all older adults, black persons aged 65 and over experienced a higher rate of hospitalizations in which the principal diagnosis was stroke. Asians and Hispanics aged 65 and over had a lower rate of stroke hospitalization than did the older population as a whole; the stroke hospitalization rate among American Indians aged 65 and over was more similar to that for the general older population.

- American Indians aged 65 and older had a markedly higher rate of mortality from diabetes (306 per 100,000) than did the older population as a whole (114 per 100,000); the rate was highest among

American Indian women (446 per 100,000). Diabetes mortality was also higher among African American older persons compared with the elderly population as a whole.

◆ Hospitalizations with a principal diagnosis of diabetes occurred at higher rates in the black, American Indian, and Hispanic older populations, compared with all older adults.

POPULATION CHARACTERISTICS

Overview

POPULATION SIZE, GROWTH, AND AGE STRUCTURE

BIRTHS AND DEATHS

GEOGRAPHIC DISTRIBUTION

Population Size, Growth, and Age Structure

During the 1980s, Wisconsin's population continued to increase in racial and ethnic diversity. While population growth was relatively slow for the total population (4 percent from 1980 to 1990), more rapid growth in the number and proportion of persons of color enriched the ethnic and racial fabric of the state (Table 1). The most dramatic change, which involved both numerical growth and a shift in the relative size of national-origin groups, occurred in Wisconsin's Asian population. Between 1980 and 1990, the state Asian population added more than 30,000 persons, primarily from large-scale immigration of Hmong and Laotians during the early 1980s.

Table 1. Overview of Wisconsin Population Size and Growth, 1980-1990

	Population		Percent Change	Percent of Total Population	
	1980	1990	1980-1990	1980	1990
Wisconsin Total	4,705,767	4,891,769	4%	100.0%	100.0%
Selected Groups:[a]					
Black	181,122	241,697	33	3.9	4.9
Native American	29,320	38,986	33	0.6	0.8
Asian	21,483	52,782	146	0.5	1.1
White	4,405,676	4,464,677	1	93.6	91.3
Hispanic, any race	62,972	93,194	48	1.3	1.9

Source: U.S. Bureau of the Census
Note: Racial groups exclude Hispanics; Asian population excludes Pacific Islanders.

Each of the groups considered in this report has a youthful age structure: at least half of their populations are under age 25 as measured by median age (Table 2, next page). In comparison, the 1990 median age of the total Wisconsin population was 32.9 years. During the ten years between 1980 and 1990, the total youth population in Wisconsin declined by about 189,000 persons. In contrast, the number of youth increased significantly in the state for most minority groups. High fertility rates contribute to rapidly increasing numbers of preschool and early childhood age children. Young age structures carry a momentum for future growth as youth age into their childbearing years.

Both the number and the proportion of older people in most minority groups are relatively small. However, many of the groups considered in this report are also experiencing rapid population growth among their older populations.

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[a] When possible, racial groups (African American, American Indian, Asian and white) are shown without including the Hispanic population. However, some census data do not allow separate counts for Hispanic and non-Hispanic persons by race. Similarly, some census data include Pacific Islanders with the Asian population and Eskimos and Aleutians with the American Indian population. When possible, the Asian and American Indian population data are shown exclusive of the respective additional groups.

Table 2. Age Distribution and Median Age of Selected Racial and Ethnic Groups in Wisconsin, 1990

	Total Population (Any Race)	Black	American Indian	Asian	Hispanic (Any Race)
Number	4,891,769	241,697	38,986	52,782	92,194
0-5 years	9%	15%	14%	18%	15%
6-17 years	17	26	25	53	28
18-64 years	60	56	57	28	53
65+ years	13	4	5	2	4
Total Percent	100%	100%	100%	100%	100%
Median Age	32.9	23.4	24.5	21.3	21.9

Source: U.S. Bureau of the Census

African Americans. The 1990 Census counted 241,697 non-Hispanic persons who self-identified their race as black, 60,575 more than in 1980.[a] Non-Hispanic blacks represented 4.9 percent of the approximately 4.9 million Wisconsinites, up from 3.9 percent in 1980.

In Wisconsin, the black population represents the largest single minority group. Although the black population growth rate from 1980 to 1990 (33 percent) was well above the growth rate for the total population (4 percent), it was far below the percentage increase for Hispanics or Asians. Thus, blacks accounted for a smaller proportion of the state minority population in 1990 (57 percent) than in 1980 (61 percent).

Nationally, the black population (30 million persons), comprised about 12 percent of the total U.S. population in 1990. Its growth rate of 13 percent was about one-third higher than the total national growth rate, but less than the black population growth rate in Wisconsin.

The median age of blacks in Wisconsin was 23.5 in 1990, almost ten years younger than the statewide average for all races. In 1990, about 40 percent of the black population was under age 18. During the 1980s, the youngest age group (less than 6 years of age) increased by 46 percent and the number of children aged 6 to 17 increased by 21 percent (Table 3).

Although the black population in Wisconsin is aging, it includes a smaller share of older persons than the U.S. black population. Between 1980 and 1990, the proportion of Wisconsin blacks age 65 and older increased from 4 percent to 5 percent. Among the total U.S. black population, the proportion 65 and over rose from 11 to 12 percent. For all races in Wisconsin, the percentage in this age group increased from 12 to 15 percent.

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[a] The U.S. Bureau of the Census estimates that the black population was undercounted nationally by about 5.7 percent.

Table 3. **Black Population and Percent Change, Wisconsin 1980 and 1990**

	Black Population			All Races
	1980	1990	Percent Change 1980-1990	Percent Change 1980-1990
Total	182,592	244,539	34%	4%
0-5 years	24,427	35,787	46	6
6-17 years	51,423	62,310	21	-10
18-64 years	98,820	135,785	36	6
65+ years	6,922	10,657	54	15

Source: U.S. Bureau of the Census

American Indians. The American Indian population in Wisconsin includes several distinct nations: the Chippewa (or Ojibwa), Oneida, Winnebago, Menominee, Stockbridge-Munsee, and the Potawatomi. The 1990 Census counted 38,986 [a] American Indians in Wisconsin, for a ten-year population increase since 1980 of 33 percent. American Indians represented 0.8 percent of the state population in 1990, compared to 0.6 percent in 1980.

Nationally, the American Indian population also increased rapidly during the 1980s, rising 38 percent to nearly 2 million. About 0.8 percent of the total U.S. population is American Indian.

The Wisconsin American Indian population is a predominantly young population. From 1980 to 1990, the number of American Indian youth ages 5 and under increased by almost 60 percent (Table 4, next page). However, the number of American Indian youth in the age group 6 to 17 decreased by 9 percent. This contributed to a decline in the proportion of the American Indian population under age 18, from 48 percent in 1980 to 38 percent in 1990. As a result, the median age increased from 21.0 to 24.4 years of age.

Table 4. **American Indian Population and Percent Change, Wisconsin 1980 and 1990**

	American Indian Population			All Races
	1980	1990	Percent Change 1980-1990	Percent Change 1980-1990
Total	29,320	38,986	33%	4%
0-5 years	3,344	5,290	58	6
6-17 years	10,655	9,670	-9	-10
18-64 years	13,854	22,041	59	6
65+ years	1,467	1,985	36	15

Source: U.S. Bureau of the Census

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[a] Some other information from the U.S. Census groups American Indians, Eskimos, and Aleutians together. Wisconsin's 1990 population included 401 persons who self-identified as Eskimo or Aleutian, bringing the combined total population to 39,387.

Southeast Asians. The Southeast Asian population in Wisconsin includes people of diverse national origins. According to the 1990 Census, there were 23,512 Southeast Asians in Wisconsin who identified their race as Asian with ethnic or national origin of Hmong (16,373), Laotian (3,622), Vietnamese (2,494), or Thai or Cambodian (1,023) (Table 5). Ten years before, in 1980, the Census reported fewer than 4,000 Southeast Asians in Wisconsin.

Table 5. Population Growth and Percent Change in the Asian Population by National Origin, Wisconsin 1990

	1980	1990	Percent Change 1980 - 1990
All Asian*	21,483	52,782	146%
Southeast Asian	3,983	23,512	490
Hmong	408	16,373	3,913
Laotian	1,472	3,622	146
Thai/Cambodian	404	1,023	153
Vietnamese	1,699	2,494	47
Other Asian	17,500	29,270	67

*Excludes Pacific Islanders

The Vietnamese population in Wisconsin differs in several ways from other Southeast Asians in the state. The major wave of Vietnamese immigration, which included many well-educated professionals and government officials, occurred between 1975 and 1979. From 1980 to 1990, the Vietnamese population in Wisconsin increased by 47 percent (from 1,699 to 2,494). This growth rate was more rapid than the statewide increase for the ten-year period, but slower than the growth rates for most other Southeast Asian groups in the state. Nearly all the 1980 to 1990 population increase in the Wisconsin Vietnamese population resulted from their high birth rate.

Although the second wave of Southeast Asian immigration to the U.S. began in 1979, most of the second-wave immigrants arrived in Wisconsin after the 1980 Census count. Thus, population increase during the 1980s among the Lao, Thai and Cambodians in Wisconsin approached 150 percent. Although heterogeneous by many measures, they were generally less well-educated, less familiar with Western institutions, and less healthy than the Vietnamese who migrated earlier.

As a result of large-scale immigration of Southeast Asians during the 1980s, Southeast Asians now represent the majority of all Asians in Wisconsin, 62 percent in 1990 compared with 18 percent in 1980. Other Asian populations have also increased, but less rapidly than the Southeast Asian group. According to the 1990 Census, the size and ten-year growth rates for the other identified Asian population groups in Wisconsin were the following: 7,354 Chinese with 52 percent population increase; 6,914 Asian Indians, 77 percent more than in 1980; 5,618 Koreans, with a 94 percent increase; 3,690 Filipinos, with a growth rate of 21 percent; and 2,765 Japanese, representing a 30 percent increase.

Overall, the Southeast Asian population in Wisconsin represents one of the youngest groups in the state, with a median age of 14.3 in 1990 (Table 6). Differences in median age exist in Wisconsin's Southeast Asian populations; however, none of the groups has a high proportion of older people.

Table 6. **Age Distribution and Median Age of Southeast Asian Population in Wisconsin, 1990**

	Southeast Asian	Hmong	Lao	Cambodian	Thai	Vietnamese
Number	23,512	16,373	3,622	521	14,784	2,494
0-5 years	24%	28%	18%	15%	14%	9%
6-17 years	32	33	34	35	23	28
18-64 years	42	37	46	48	57	61
65+ years	3	3	2	2	5	3
Total Percent	100%	100%	100%	100%	100%	100%
Median Age	14.3	12.5	16.8	18.0	29.2	23.3

Source: U.S. Bureau of the Census

The Hmong, largest of the Southeast Asian population groups, represent the youngest of the Southeast Asian populations in Wisconsin. Among the Hmong in Wisconsin, 61 percent are under age 18, with 28 percent in the preschool ages under 6 years. In 1990, the median age of Hmong in Wisconsin was 12.5 years. The age profiles of the Laotian and Cambodian populations in Wisconsin lie between the Hmong and the Vietnamese or Thai populations.

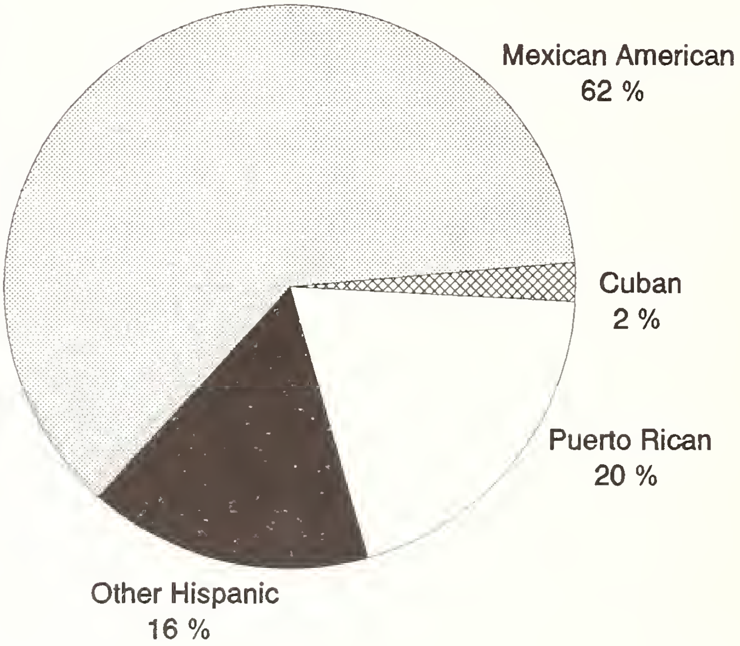
Hispanics. The Hispanic-origin population (of any race) constitutes the second largest minority group in Wisconsin. From 1980 to 1990, this group increased by 48 percent, from 62,972 to 93,194. As a result of this growth rate, the Hispanic population increased as a proportion of the state population from 1.3 to 1.9 percent. Nationally, Hispanics represented 9 percent of the U.S. population in 1990, with a ten-year increase of 53 percent since 1980.

The Hispanic population in Wisconsin includes diverse national-origin groups (Figure 1). The majority, 62 percent, self-identify as Mexican American; 20 percent are Puerto Rican, 2 percent Cuban, and 16 percent other Hispanic. Relative to the national average, Wisconsin's Hispanic population includes a slightly smaller proportion of Mexican Americans and Cubans; concurrently, a somewhat larger proportion of Wisconsin Hispanics identify their national origin as Puerto Rican or other Hispanic.

Each of the Hispanic national-origin groups in Wisconsin represents a rapidly growing population. From 1980 to 1990, the Mexican American population in Wisconsin increased by 40 percent, with a 1990 population of 57,618. During the same time, the Puerto Rican population increased by 82 percent, from 10,483 to 19,116. Population growth for the Cuban population was 69 percent, from 993 to 1,679.

About half the Mexican and Puerto Rican populations in Wisconsin are under age 21, with respective median ages of 21.4 and 21.7 (Table 7). Since 1980, the number of youth in the age group 6-17 has increased more rapidly than any other age group. This is the same age group which declined numerically statewide for the total population.

Figure 1. Composition of the Hispanic Population, Wisconsin 1990



Source: Wisconsin Center for Health Statistics, data from the 1990 U.S. Census of Population.

Table 7. Age Distribution and Median Age of Hispanic Population in Wisconsin, 1990

	Total Hispanic (Any Race)	Mexican	Puerto Rican	Cuban	Other Hispanic
Number	93,194	57,615	19,116	1,679	14,784
0-5 years	15%	16%	17%	14%	14%
6-17 years	28	28	27	15	23
18-64 years	53	53	53	64	57
65+ years	4	3	3	6	5
Total percent	100%	100%	100%	100%	100%
Median Age	21.9	21.4	21.0	29.8	23.7

Source: U.S. Bureau of the Census

Because of increases in other age groups, the proportion of older Mexican and Puerto Rican Hispanics changed little between 1980 and 1990. However, during the 1980s, the number of elderly (65+ years) Mexican Hispanics in Wisconsin increased by 29 percent, and the number of older Puerto Rican Hispanics almost doubled.

As a group, Cuban-origin Hispanics in Wisconsin are older than Hispanics of Mexican or Puerto Rican origin. Their median age (29.8) is more than 8 years older than that for Mexican Hispanics, though still less than the median age for the total population. Since 1980, the proportion of older Cubans has increased slightly. The major change, however, has been the proportionate decline in youth under age 18 and increase in the 18-to-64 population.

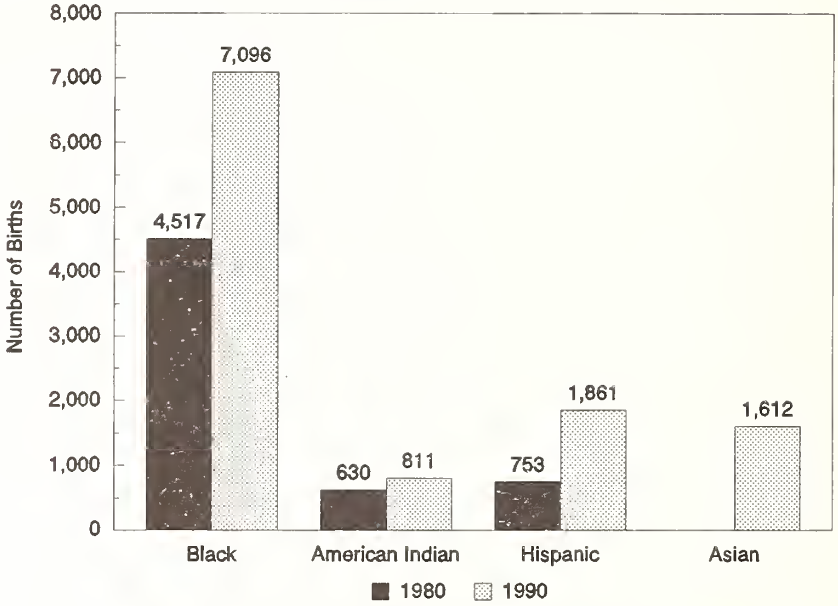
Other Hispanics in Wisconsin are a heterogeneous group since the group represents a residual category. Proportionately, other Hispanics are older than Mexican or Puerto Rican Hispanics, although it remains a much younger population than the statewide average.

Births and Deaths

Births

Statewide, the total number of births was less in 1990 (72,636) than in 1980 (74,763). This resulted from a decline in both the total number of women in their childbearing years and in the birth rate. In contrast, the annual number of births to most Wisconsin minority groups increased from 1980 to 1990 (Figure 2). [a] [b]

Figure 2. Number of Births by Race/Ethnicity, Wisconsin 1980 and 1990



Source: Wisconsin Center for Health Statistics, birth certificates (resident data).

In 1990, 7,096 infants were born to African American women, a 57 percent increase over the 4,517 births in 1980. These births resulted in a 1990 general fertility rate (the number of children born per 1,000 women aged 15 to 44) of 110, compared to a rate of 95 in 1980.

The number of births to Hispanic women in Wisconsin increased from 753 in 1980 to 1,861 in 1990. Hispanic births yielded a 1990 fertility rate of 86, compared to 52 in 1980. The large increases from 1980 to 1990 in Hispanic births and the fertility rate were due partly to change in the 1989 birth certificate for identification of Hispanic ethnicity. In 1990, comparable fertility rates among Hispanics were lowest for persons of Cuban and "other Hispanic" origins; they were intermediate for Hispanics of Puerto Rican origin and highest for Mexican Americans.

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[a] Part of the increase in Hispanic births resulted from a change (in 1989) in the birth certificate; this increased the number of births identified as Hispanic.

[b] Comparison between 1980 and 1990 birth rates is not made here for Wisconsin's Asian population as a whole because of the significant change over the decade in the composition of this population.

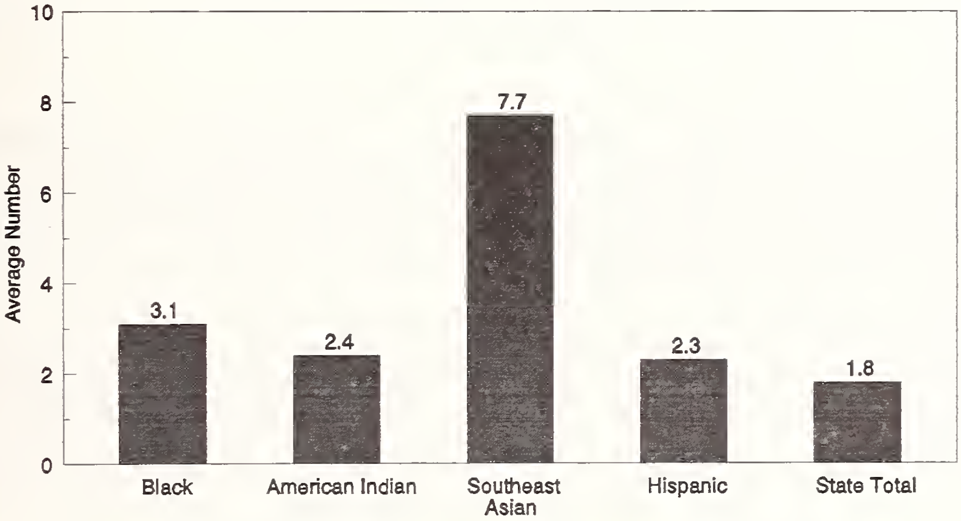
From 1980 to 1990, the annual number of births in the American Indian population increased from 630 to 811. This increase resulted from an increase in the number of women of childbearing age. The 1990 general fertility rate of 86 births per 1,000 women was slightly lower than the 1980 rate of 88.

The 1990 fertility rate for the Asian population in Wisconsin reflects the diversity of the group. The 1,179 births to resident Southeast Asian women represented a general fertility rate of 265 births per 1,000 Southeast Asian women aged 15 to 44 years. Their rate was strongly influenced by the Hmong population, which had a 1990 birth rate of 368 births per 1,000 women. Births to Southeast Asian women constituted about three-fourths of all births to Asian women in Wisconsin.

Statewide, the fertility rate declined from 69 in 1980 to 64 in 1990. While the statewide rate was less in 1990 than in 1980, minority rates remained above the statewide average.

Age-Specific Birth Rates. Total fertility rates indicate the potential impact of current fertility levels on completed family size (Figure 3). The number shown indicates the average number of births per woman that would occur if women experienced throughout the childbearing years the age-specific birth rates observed in 1990. Since these measures are computed from age-specific birth rates, they adjust for race/ethnic differences in age distributions within the 15-to-44 age range.

Figure 3. Average Completed Fertility Per Woman* By Race/Ethnicity, Based on Wisconsin 1990 Age-Specific Birth Rates



Source: Wisconsin Center for Health Statistics, birth certificates (resident data) and 1990 Census of Population.

*This represents the average number of children per woman by the end of her childbearing years, based on 1990 age-specific birth rates.

Regardless of age or ethnicity, women are more likely to give birth during their twenties than at younger or older ages. Statewide, the highest 1990 age-specific birth rate occurred in the late twenties (124 births per 1,000 women aged 25 to 29), while the highest rates among minority groups occurred during the early twenties (20 to 24 years). Age-specific birth rates declined rapidly after age 30 statewide and in most minority groups; however, age-specific birth rates for Southeast Asians remained relatively high even at older ages.

In the black population, the highest 1990 birth rates occurred among women aged 20 to 24 (215 per 1,000 in the age group), followed by birth rates among teens (176 per 1,000). At ages 25 and below, the age-specific birth rates in the black population exceeded the statewide average. After age 25, however, age-specific birth rates in the black population were similar to or below the respective statewide rates. Age-specific rates for the African American population indicate an average of 3.1 children per woman. While the total fertility rate among the black population exceeded the statewide average, the difference reflects higher black fertility at younger ages.

For American Indian women in 1990, the Wisconsin age-specific birth rates resulted in an average total fertility rate of 2.4 children per woman. The peak interval for childbearing, ages 20 to 24, yielded a birth rate of 177 births per 1,000 women. American Indian birth rates for women ages 15 to 19 and 20 to 24 were above the statewide average, but for ages 25 to 29, 30 to 34, and 35 to 39, they were below the statewide average.

On average, Hispanic women in Wisconsin would have 2.3 children per woman according to 1990 age-specific birth rates. The highest age-specific rate was 143 births per 1,000 women at ages 20 to 24. In comparison to the statewide average, Hispanic birth rates were higher for teens 15 to 19 years, but lower for women in their late twenties, 25 to 29 years. Similar to the statewide pattern, Hispanic age-specific birth rates were noticeably lower after age 30.

In 1990, the age-specific birth rates for Southeast Asian women in Wisconsin implied an average of 7.7 children per woman. The highest age-specific birth rate was 393 births per 1,000 women aged 20 to 24. Birth rates at older ages were modestly lower; however, in comparison to the statewide average, Southeast Asian birth rates remained high through the end of the childbearing years.

Deaths

Age and sex are the two demographic characteristics that most strongly influence when death occurs and the cause of death. In all population groups, the probability of death resembles a U-shaped curve, where the risk of dying declines rapidly after the first year of life, remains low during the young adult years, and increases with advancing age. The amount and the timing of this risk, however, differs at various ages for men and women and for minority populations.

The total number of deaths for a given group primarily reflects the size of the group and the relative number of older people in the group. In the five years from 1987 to 1991, Wisconsin averaged 42,617 deaths each year.[a] Of these, 1,293 occurred in the black population, 201 in the American Indian population, 68 in the total Asian population (including 33 among Southeast Asians), and 136 in the Hispanic population.

Age-Specific Mortality Rates. Within four broad age categories (1 to 17, 18 to 44, 45 to 64, 65 and over), mortality rates were generally highest for the black population, followed by the American Indian population. Mortality rates were lowest for the Asian and Hispanic populations. In each of the four major age categories, the male age-specific death rate exceeded the female death rate. This was true in each of the minority group populations.

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[a] In this report, yearly mortality frequencies for Wisconsin were summed for the 5-year period of 1987 through 1991, then divided by 5. This was done to stabilize the random variation that may occur on a yearly basis in the number of deaths for numerically small population groups.

In every minority group, Wisconsin mortality was lowest for people in the 1 to 17 age group. At this young age, relatively few people die. The average yearly number of deaths in Wisconsin from 1987 to 1991 for youth ages 1 to 17 were as follows: black, 56; American Indian, 6; Asian, 8; Hispanic, 6. Statewide, an average of 423 deaths occurred annually among youth aged 1 to 17 years.

Taking into account the number of youth results in a statewide mortality rate of 35 deaths for every 100,000 youth ages 1 to 17 (Table 8). Among the black population, the mortality rate was 79 deaths for every 100,000 black youth in this age group. Thus, the black youth mortality rate was more than two times the state average. Mortality rates for American Indian, Asian, and Hispanic youth were, respectively, 45, 38, and 16 deaths per 100,000 population.

Among Wisconsin adults aged 18-44, mortality rates for blacks and American Indians were higher than the all-races rates. Differentials by race were seen for both sexes. The overall (all-causes) mortality rate for all Wisconsin residents aged 18-44 was 154 deaths per 100,000 population for males and 69 per 100,000 for females.

Table 8. **Age-Specific Mortality Rates* by Race/Ethnicity, Ages 1-17 and 18-44, Wisconsin 1987-1991 Yearly Average**

	Ages 1 - 17			Ages 18 - 44		
	Male	Female	Total	Male	Female	Total
Black	89	68	79	366	128	236
American Indian	59	**	45	272	119	194
All Asian	56	**	38	79	35	57
Hispanic	26	**	16	110	26	71
Non-Hispanic White	40	25	33	144	66	105
Total	43	27	35	154	69	112

* Number of deaths per 100,000 population in the age- and sex-specific group. Population data are from the 1990 U.S. Census.
** Rates were not calculated if fewer than 20 deaths occurred in the five-year period.

Among the black population aged 18-44, however, the mortality rate was 366 deaths per 100,000 among males, which was 2.4 times the rate for all males in the age group; and 128 per 100,000 among females, nearly two times (1.9) the rate for all women aged 18-44. The rate of death among American Indian males aged 18-44 (272 per 100,000) was 1.8 times the rate for all males in the age group; the differential for American Indian women was nearly as large (1.7). Age-specific death rates among Asians and Hispanics appeared to be lower than the rate for all persons in this age group.[a]

Among middle-aged adults (ages 45-64), death rates were again distinctly higher among blacks than among all persons in the age group; American Indians also had higher rates than the total rates (Table 9, next page). Black men aged 45-64 died at a rate of 1,557 per 100,000 population, or 1.8 times the rate for all men in this age group. Black women had a mortality rate of 842 per 100,000 population, or 1.6

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[a] The markedly lower death rates among Asians in Wisconsin are consistent with national findings. In contrast, the low death rates among Hispanics in Wisconsin are not seen in national data; therefore, the possibility exists that the low rates among Wisconsin Hispanics may be artifactual. Rates would appear artifactually low if Hispanic ethnicity was underreported on death certificates.

times the rate for all women at these ages. The death rates among American Indian men and women aged 45-64 were 1,309 per 100,000 and 840 per 100,000, respectively: 1.5 and 1.6 times the comparable rates for all males and all females in the age group. Again, death rates among Asians and Hispanics were markedly lower than the total rates for the age group.

Table 9. Age-Specific Mortality Rates* by Race/Ethnicity, Ages 45-64 and 65+, Wisconsin 1987-1991 Yearly Average

	Ages 45-64			Ages 65+		
	Male	Female	Total	Male	Female	Total
Black	1,557	842	1,163	6,156	4,414	5,115
Amc. Indian	1,309	840	1,067	5,701	4,460	4,992
All Asian	288	279	283	2,121	1,435	1,712
Hispanic	433	235	336	2,307	1,294	1,742
Non-Hispanic White	866	501	680	5,993	4,518	5,118
Total	882	511	693	5,966	4,495	5,093

*Number of deaths per 100,000 population in the age- and sex-specific group. Population data are from the 1990 U.S. Census.

Age-specific death rates are highest for all groups among persons aged 65 and over. The difference between groups in their mortality rates diminishes considerably at older ages. To some extent, this results from combining all persons aged 65 and over rather than looking at the more detailed age groups within the respective older populations. Groups that include relatively large numbers of very old people, such as the non-Hispanic white population, will generally have higher mortality rates than groups where the "young elderly" comprise a relatively larger proportion of their 65+ population.

Among males aged 65 and over, black males had the highest mortality rate (6,156 deaths per 100,000) (Table 9). The mortality rate for black males aged 65 and over was close to the statewide rate for all older males (5,966 deaths per 100,000). The mortality rate for American Indian males aged 65 and over (5,701 death per 100,000) was just below the statewide average for men. Asian and Hispanic men aged 65 and over had mortality rates less than half the statewide rate for all men in the age group.

Among older women, both blacks and American Indians had rates very close to the statewide average. The death rates among black and American Indian women were, respectively, 4,414 and 4,460 deaths per 100,000 population. The statewide average for all women 65 years and over was 4,495. The mortality rate for older Asian women (1,465) was about one-third the statewide average. The mortality rate of Hispanic women (1,294) was the lowest rate in the 65-and-over population.

Leading Causes of Death. Heart disease and cancer constitute the leading causes of death in all of the groups considered in this report. Statewide, these two causes of death plus deaths due to stroke accounted for two-thirds (66 percent) of all Wisconsin deaths in the 1987-91 period. In contrast, injuries accounted for proportionately more deaths than stroke in many Wisconsin minority groups. Both a younger age structure and higher injury mortality among minority populations influence this difference.

Even though five years of data were analyzed, total deaths among Asians in Wisconsin were too few to permit analysis for most causes of death,[a] much less allow calculation of mortality rates for separate categories by subcontinent or country (e.g., Southeast Asian, Vietnamese). Similarly, there were too few deaths among persons for whom Hispanic ethnicity was reported on the death certificate to analyze those deaths for specific groups of Hispanics (e.g., Mexican-Americans, Puerto Ricans). This is unfortunate, because it is clear that any racial or ethnic group consists of a diversity of people, with a wide variety of individual health-related characteristics. One danger in being limited to an overly broad category, especially where a group appears to have relatively good measures of health (such as the low death rates for Asians noted above) is that problems experienced by a smaller subgroup (such as Southeast Asian refugee populations) may be masked by the overall good outcomes of the group.

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[a] For almost all causes of death, no analysis can be undertaken of deaths among Asians in Wisconsin, owing to the small number of deaths that occur in this group. The small number of deaths reflect their relatively small population size, their lower death rates (assumed from national findings), and the younger age structure of some Asian subgroups, notably the Hmong. During the 1987-1991 period, an annual average total of 68 deaths occurred each year among Asians in Wisconsin. Appendix 2 ranks the leading causes of death by frequency of occurrence for the black, American Indian, Southeast Asian, Other Asian, Hispanic and the Wisconsin total populations.

Geographic Distribution

Geographic diversity characterizes minority populations in Wisconsin (Table 10). Most of the black population is geographically concentrated in a few metropolitan[a] areas in the state. In contrast, the American Indian population is about equally divided between metropolitan and nonmetropolitan counties. In the Asian population, which is overall largely metropolitan, distinct geographic residential patterns exist within the different Southeast Asian national origin groups. In contrast, national origin groups within the Hispanic population, also largely metropolitan, are more dispersed across the state.

Table 10. Share of Population Living in Metropolitan and Nonmetropolitan Counties, Wisconsin 1990

	Total	Metropolitan	Nonmetropolitan
Total	100%	67%	33%
Black*	100%	98%	2%
American Indian	100%	50%	50%
All Asian**	100%	87%	13%
Hispanic, any race	100%	87%	13%

Source: U.S. Bureau of the Census
* Excludes Hispanics
** Excludes Pacific Islanders

African Americans. Although some counties experienced notable black population growth, the distribution of blacks across counties in Wisconsin has changed little since 1980. In 1990, 97 percent of all blacks lived in one of five counties (80 percent in Milwaukee, 7 percent in Racine, 4 percent in Dane, 3 percent in Rock and 2 percent in Kenosha).

In 1990, only 2 percent of the black population in Wisconsin (about 5,000 people) lived outside the southeastern or southern regions[b] of the state (see Map). This is comparable with 1980. Although the black population increased more rapidly than the state average in the northeastern, northern and western areas of the state, significant numerical increase was limited to a few counties. Only Brown and Winnebago counties in the northeastern region had black populations of more than 500 in 1990. The 1990 Census reported black populations of 100 or more in only 13 of the 50 counties outside the southeastern or southern regions.

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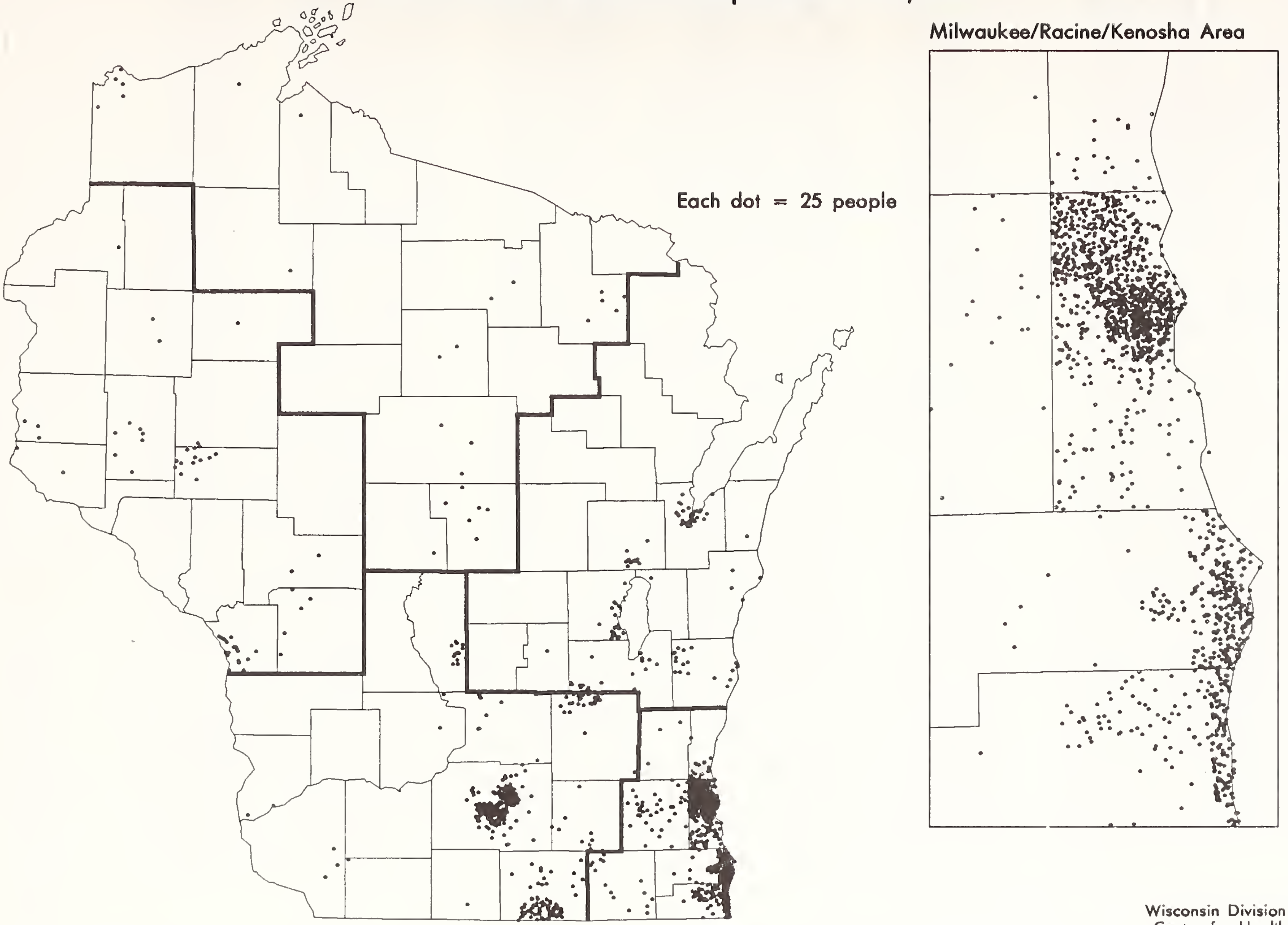
[a] "Metropolitan" and "nonmetropolitan" are defined according to Census Bureau conventions. A metropolitan area consists of a county or group of adjacent counties containing an urbanized area of at least 50,000. In this report, counties are classified as metropolitan or nonmetropolitan based on the Federal Office of Management and Budget designations at the time of the April 1990 census count, which included 19 Wisconsin counties. In December 1992, subsequent designations by the OMB increased this number to 20.

[b] Regional classification is based on the Wisconsin Department of Health and Social Services, Division of Health, grouping of counties.

Wisconsin African American Population by DOH Region and Zip Code, 1990

Total African American Population: 244,305



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Most blacks live in Wisconsin's largest metropolitan areas. During the 1980s, the number of blacks living in Wisconsin metropolitan areas increased by 33 percent. This was well above the 1 percent increase for metropolitan, non-Hispanic whites.

Nationally, considerable attention has been given to the movement of many blacks from the central cities of large metropolitan areas into the suburbs. Black suburbanization has also been occurring in Wisconsin. Between 1980 and 1990, black population increased in three distinct metropolitan areas: in central cities, in the urban fringes around central cities (i.e., "near suburbs"), and in parts of metropolitan areas located beyond the urban fringe (the "remote suburbs"). Within these areas, black population increased most rapidly in the near suburbs (62.5 percent), least in the more remote suburbs (27 percent), and moderately in the central cities (32 percent).

American Indians. The majority (about 60 percent) of American Indians in Wisconsin live in the northeastern and northern regions of the state (see Map). In these regions, about half of American Indians live on reservations or tribal trust lands. Statewide, about one-third (32 percent) of the American Indian population in Wisconsin lived on one of 11 reservations or trust lands in 1990. This proportion has changed little since 1980.

The northeastern and northern areas of Wisconsin include the most populated American Indian reservations and trust lands. The American Indian populations on these reservations include: Menominee Reservation with a population of 3,181; Oneida (West) Reservation in Brown and Outagamie Counties, 2,447; Lac Courte Oreilles Reservation in Sawyer County, 1,769; Lac du Flambeau Reservation in Vilas County, 1,431; Bad River Reservation in Ashland County, 868; Red Cliff Reservation in Bayfield County, 727; Stockbridge Reservation in Shawano County, 447. Forest County includes both the Sokaogon (Mole Lake) Chippewa Community and Trust Lands with a combined American Indian population of 311 as well as the Forest County Potowatomi Reservation with an American Indian population of 266.

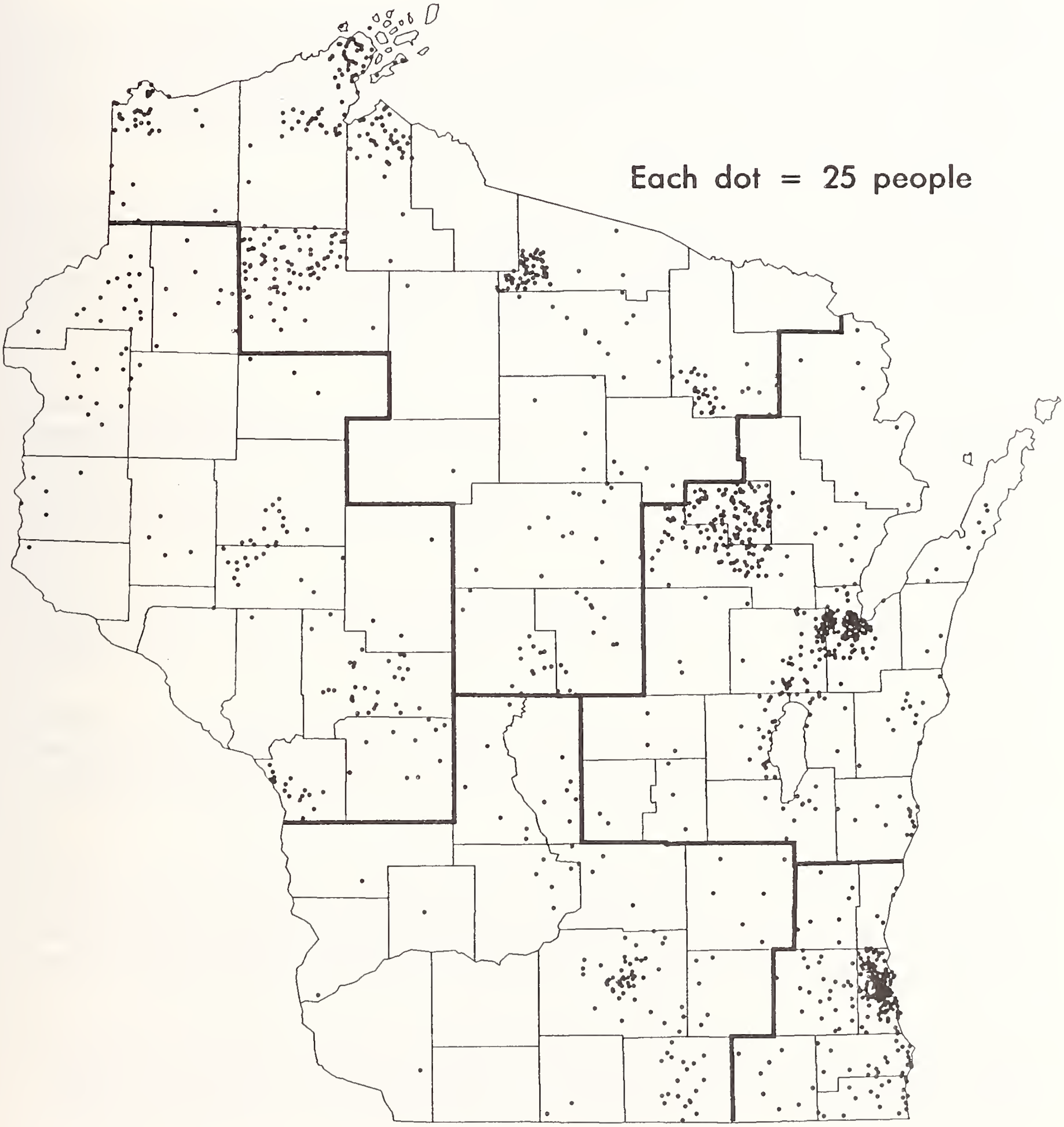
About 3,600 American Indians, 9 percent of all American Indians in Wisconsin, live in the western part of the state. Compared with Indians in the northern and northeastern parts of the state, proportionately fewer Indians in western Wisconsin (22 percent) live in areas designated as reservation or trust lands. In 1990, 459 American Indians lived on land which was part of the St. Croix Chippewa Reservation, which spreads across Barron, Burnett, Polk and Douglas counties. Winnebago Reservation and Trust Lands, which extend across both the south and western parts of Wisconsin, included 570 American Indians, largely in Jackson County, in 1990.

While American Indian reservations constitute geographically identifiable areas, the Indian population on reservations does not represent the total population of tribal members. In some areas, members may live in places close to the reservation, particularly where housing is sparse on the reservations. The Winnebago are a non-reservation group and tend not to live on reservation land. Statewide, 41 percent of all persons living on American Indian reservation or trust lands identify themselves as American Indian. The majority of non-Indians on reservations lands are the more than 15,000 people who are not American Indian and live within the Oneida Reservation boundaries.

The American Indian population of Wisconsin is almost equally divided between metropolitan and nonmetropolitan areas. About 14,000 American Indians live in or near the central city of one of the state's metropolitan areas. The 1990 Census reported 5,797 American Indians in the City of Milwaukee, the largest single area of American Indian population concentration in Wisconsin.

Wisconsin American Indian Population by DOH Region and Zip Code, 1990

Total American Indian Population: 39,367



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Southeast Asians. The Southeast Asian population in Wisconsin tends to be concentrated in selected counties around the state (see Map). In 1990, 30 percent of all Southeast Asians in Wisconsin lived in the state's southeastern region. Milwaukee County had a Southeast Asian population of 6,464, and Waukesha County, 2,315. Although Hmong constituted nearly 70 percent of the total Southeast Asian population in Wisconsin, they represented just under half (48 percent) of all Southeast Asians in the southeastern region. This part of the state also included about half of the Vietnamese population (1,322) and just over half of the Cambodian population (2,086).

The proportion of Southeast Asians who lived in the northeastern part of the state (29 percent) was similar to that in the southeast (30 percent). Each of the following northeastern counties included between 1,500 and 2,000 Southeast Asians: Brown (1,809), Sheboygan (1,423) and Outagamie (1,396). Smaller numbers were in Manitowoc (823) and Fond du Lac (171) counties. Hmong represented 82 percent of the Southeast Asian population in the northeastern region of the state.

Hmong constituted an even larger share of the Southeast Asian population in the western and northern parts of the state: 91 and 89 percent, respectively. In 1990, Marathon and La Crosse counties each included approximately 2,000 Southeast Asians and Eau Claire almost 1,600. The southern region of Wisconsin included just 9 percent of Wisconsin's Southeast Asian population, primarily in Dane and, to a lesser extent, in Rock County. Relative to other regions, the southeastern region was more diverse in the composition of its Southeast Asian population according to national origin.

Hispanics. Hispanics live in every county in Wisconsin. Although there is more geographic diversity across the state for the Hispanic population than for the black population, Hispanics remain concentrated in a few areas (see Map). Three-fourths of the Hispanic population live in one of five counties: Milwaukee (48 percent), Racine (10 percent), Dane (6 percent), Kenosha (6 percent) or Waukesha (6 percent). (In comparison, 36 percent of the total state population lives in one of these five counties.) In 1990, approximately 44,700 persons of Hispanic origin lived in Milwaukee; between 5,000 and 6,000 lived in each of the other four counties.

In addition to the areas of Hispanic population concentration mentioned above, several counties reported more than 1,000 persons of Hispanic origin among their populations in 1990: Walworth, Rock, Sheboygan, and Brown counties.

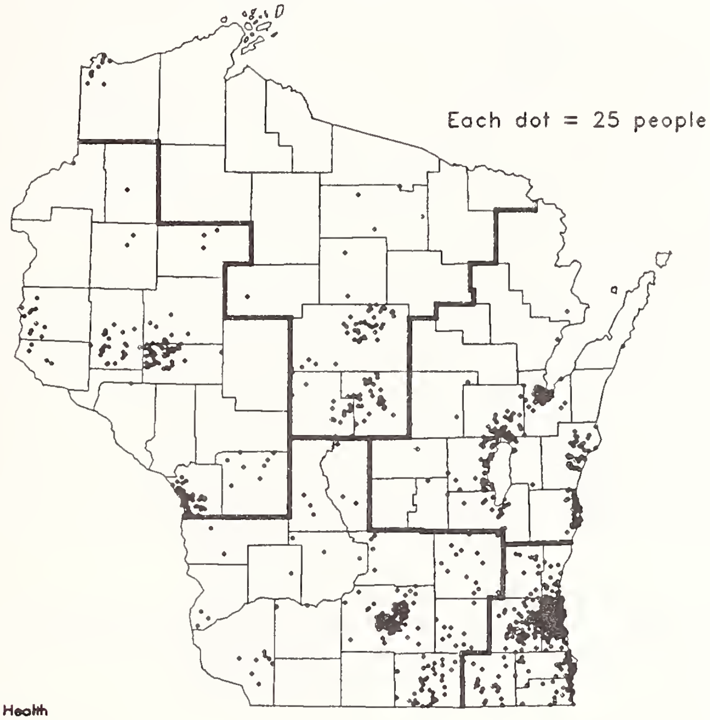
Statewide and in most Wisconsin counties, Mexican Americans constitute the majority of the Hispanic population. While overall, 62 percent of the Hispanic population self-identifies with Mexican origin, this proportion exceeds 80 percent in five counties: Jefferson, Racine, Walworth, Marquette, and Waushara. The distribution of Mexican Americans across counties and regions in the state is generally similar to that for the total Hispanic population.

Puerto Ricans are the most regionally concentrated of the Hispanic origin groups in Wisconsin. In 1990, 90 percent of all Puerto Ricans lived in the southeastern region; 78 percent of all Puerto Ricans in the state lived in Milwaukee County. Thus, the 15,000 Puerto Ricans in Milwaukee County represented one-third of the county's Hispanic origin population. Puerto Ricans live in nearly all Wisconsin counties, but they tend to represent relatively small proportions of all Hispanics, as reported in the census data.

Numerically, Cubans are the smallest of the Hispanic national origin groups, with about 1,700 in 1990. About half (52 percent), live in the southeastern area of the state, primarily in Milwaukee County (37 percent). The second largest area of concentration for the Cuban population is Dane County (15 percent, with about 250 people). The southern area of the state includes 26 percent of all Cubans in Wisconsin.

Other Hispanics in Wisconsin include persons with several specific national origins, such as Central and South America, Spain or the Dominican Republic, as well as persons of Hispanic origin identifying themselves as Spanish, Hispano, Latino, and so on. Geographic differences in reporting national origin among Hispanics may influence the relative proportion of groups.

Wisconsin Asian Population
by DOH Region and Zip Code, 1990
Total Asian Population: 53,058



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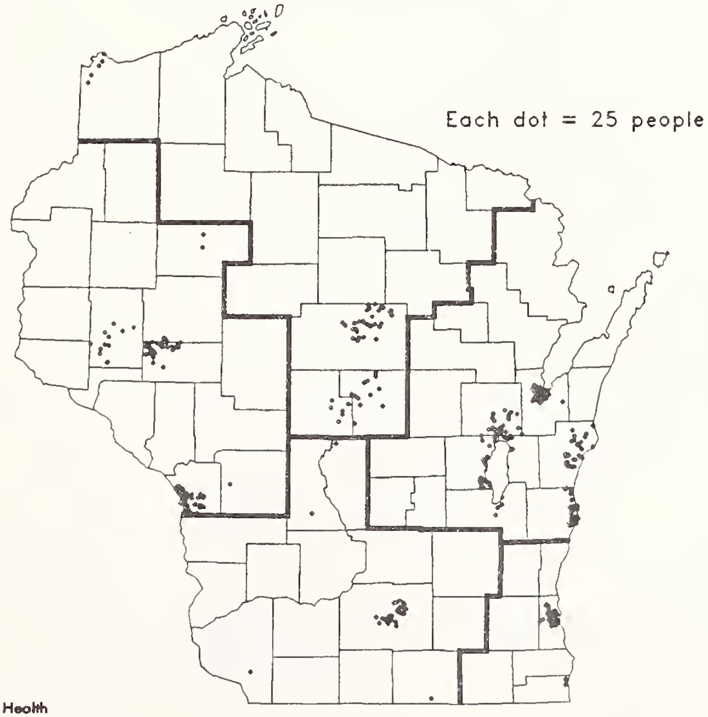
Wisconsin Hmong Population
by DOH Region and Zip Code, 1990
Total Hmong Population: 16,980



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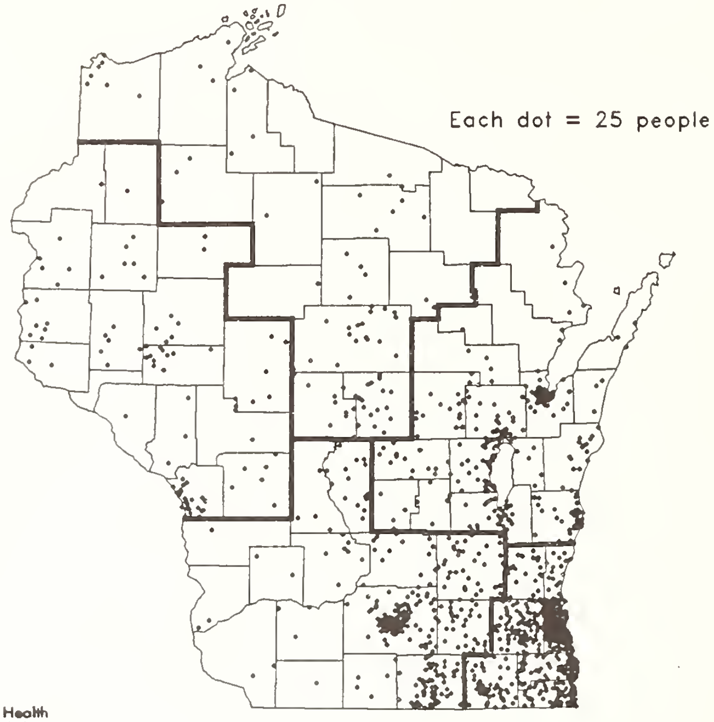
Wisconsin Hispanic Population
by DOH Region and Zip Code, 1990
Total Hispanic Population: 87,609



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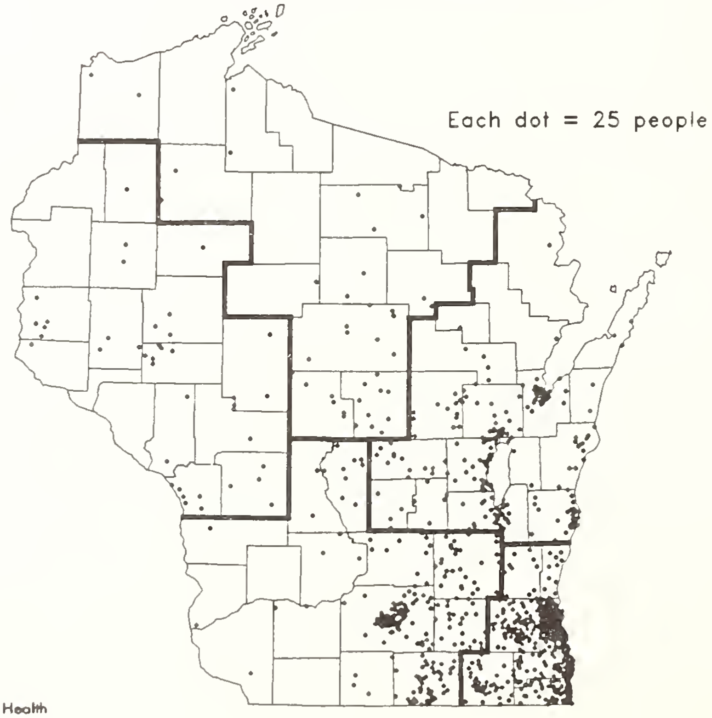
Wisconsin Mexican-American Population
by DOH Region and Zip Code, 1990
Total Mexican-American Population: 56,903



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LIVING ARRANGEMENTS

FAMILY STRUCTURE AND CHILDREN'S LIVING ARRANGEMENTS

LIVING ARRANGEMENTS AMONG OLDER ADULTS

Family Structure[a] and Children's Living Arrangements

Fundamental contrasts exist in the prevalence of various living arrangements and family relationships. The youthful age structure and higher fertility of minority groups affect their living arrangements so that families with children represent a proportionately larger share of minority households. The age structure also contributes to the prevalence of single-person households because elderly people often live alone. In addition to demographic trends, cultural and economic differences also influence living arrangements.

Relative to many minority groups, a larger proportion of Wisconsin families as a whole are in the "post-child" stage of life. The younger age structure of minority populations means that their families are more likely to have children living at home. Groups differ, however, not only in the timing but also in the patterns of their family formation. In general, the average number of people per family is greater in minority populations than the state average. Two-thirds or more of African American, American Indian, Asian and Hispanic families include children, compared to about half of all families in the state (Table 11). Among families that include children, the groups also differ in the prevalence of mother-only families.

Table 11. Family Characteristics of Selected Racial and Ethnic Groups in Wisconsin, 1990

Family Characteristic	Total Population (Any Race)	Black	American Indian	All Asian	Hispanic (Any Race)
Persons per family	3.1	3.6	3.6	4.5	3.8
Total families	1,275,172	54,013	8,556	9,074	18,591
Families with children					
Percent	49%	67%	66%	73%	70%
(Number)	(625,633)	(36,658)	(5,663)	(6,678)	(12,959)
Percent married-couple families	79%	30%	51%	87%	65%
Percent with female head	17%	64%	40%	11%	29%

Source: U.S. Bureau of the Census

African Americans. Most black households in Wisconsin are family households where the members are related by birth, marriage or adoption. Extended family living arrangements exist more often among black families. On average, black families include more people than the state average, but fewer than Hispanic or Asian families. In 1990, the average black family included 3.6 persons, compared with an average of 3.1 persons for all families in the state.

In 1990, 67 percent of the 54,552 black families in Wisconsin included related children under age 18. Relatively few families with children were comprised of a married couple with children. This proportion has declined in the last ten years from 41 percent in 1980 to 30 percent in 1990. The majority of black families with children in Wisconsin consist of a female head of household living without a husband. This proportion increased between 1980 and 1990, from 54 percent to 64 percent.

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[a] "Family" is defined according to the Census Bureau as a household in which one or more other persons living in the same household is related to the householder (the person in whose name the housing unit is owned or rented). The household of a person living alone is defined as a nonfamily household.

The percentage of black children who live in a married-couple family decreased from 36 percent in 1980 to 24 percent in 1990 (Table 12). More than half of all black children lived in a single-parent family with their mothers in 1990. The numbers and proportions of children living in single-parent families have been increasing for both black families and Wisconsin families as a whole for several decades. The level has, however, been much higher for black children. In 1990, 13 percent of black children lived in a household headed by a relative other than a parent, usually a grandparent. In these cases, the child's parent may or may not have also been in the household. The comparable proportion for all children in Wisconsin was 3 percent.

Table 12. Living Arrangements of Persons Less than 18 Years, Black Population, Wisconsin 1990

Number of Persons Less than 18 Years	96,675
In household of parent(s)	83%
In married-couple family	24%
In female-headed family	55%
In grandparent's household	10%
In other relative's household	4%
In nonrelative's household	3%

Source: U.S. Bureau of the Census

American Indians. In 1990, there were about 8,636 American Indian families in Wisconsin, averaging 3.6 persons per family household. The proportion of family households with children, 66 percent, was similar to that among black families. As occurred statewide, the proportion of American Indian families with children declined during the 1980s. Among American Indian families with children, about half (51 percent) were married-couple families. Female-headed families with children were less frequent among Wisconsin's American Indian population than among the black population, but more common than the statewide average.

Of the 14,960 American Indian youth (less than 18 years of age) in Wisconsin in 1990, 86 percent lived in a parent's household (Table 13). Just under half (46 percent) were in households with two parents, and about one-third (32 percent) were in a female-headed family. Approximately 7 percent lived in a grandparent's household, where the child's parent(s) may or may not have been present.

Table 13. **Living Arrangements of Persons Less than 18 Years, American Indian Population, Wisconsin 1990**

Number of Persons Less than 18 Years	14,960
In household of parent(s)	86%
In married-couple family	46%
In female-headed family	32%
In grandparent's household	7%
In other relative's household	3%
In nonrelative's household	4%

Source: U.S. Bureau of the Census

Hispanics. On average, family size among the Hispanic-origin populations is larger than the state average. This variation reflects the comparatively high proportion of Hispanic families that include children and a larger average number of children per family. Among the Hispanic-origin groups, average family size is smallest for the Cuban population, with 3.2 persons per family (Table 14). It is largest among the Mexican-origin population, in which average family size is 3.9.

The majority of families in each Hispanic national-origin group include children, although the proportion is higher for Mexican and Puerto Rican-origin families. Among families with children, most consist of a married-couple family. Between 67 and 69 percent of Mexican, Cuban and other Hispanic-origin families with children include a married parent. Just over half (54 percent) of Puerto Rican-origin families with children are married-couple families.

Table 14. **Family and Household Characteristics of Hispanic Origin Population, Wisconsin 1990**

Family Characteristic	Mexican	Puerto Rican	Cuban	Other Hispanic
Persons per family	3.9	3.8	3.2	3.5
Total number of families	11,396	4,136	303	2,756
Families with children				
Percent	70%	74%	61%	64%
(Number)	(7,993)	(1,715)	(184)	(1,773)
Percent married-couple families	68%	54%	67%	69%
Percent with female head	26%	41%	21%	25%

Source: U.S. Bureau of the Census

The majority (59 percent) of Mexican-origin children in Wisconsin live in a married-couple family (Table 15). As in all other population groups, however, the proportion is declining. Between 1980 and 1990, the share of Mexican-origin children in two-parent families declined from 69 percent to 59 percent. During this time, the proportion of children who lived in female-headed households increased (from 20 percent in 1980 to 25 percent in 1990).

A smaller proportion of Puerto Rican and Cuban-origin children than Mexican-origin children live in a family with a married parent. In 1990, 39 percent of Puerto Rican-origin children and 35 percent of Cuban-origin children lived in a female-headed family. Other Hispanic children were more likely than Mexican, Puerto Rican or Cuban-origin children to live in a two-parent family and less likely to live in a female-headed family.

Table 15. Living Arrangements of Persons Less than 18 Years, Hispanic Population, Wisconsin 1990

	Mexican	Puerto Rican	Cuban	Other Hispanic
Number of Persons Less than 18 Years	24,914	8,364	494	5,570
In household of parent(s)	88%	89%	92%	90%
In married-couple family	59%	46%	55%	64%
In female-headed family	25%	39%	35%	22%
In grandparent's household	5%	5%	2%	4%
In other relative's household	2%	3%	<1%	2%
In nonrelative's household	3%	2%	4%	3%

Source: U.S. Bureau of the Census

Southeast Asians. The vast majority of Southeast Asian families in Wisconsin include children (Table 16). Less than 10 percent of Hmong families in Wisconsin did not have children under age 18. In most cases, families include a married couple. While female-headed families with children are relatively rare among Southeast Asians, they represented 10 percent of all Wisconsin Southeast Asian families in 1990.

The predominance of married-couple families that include children, in combination with high birth rates, results in large families among the Southeast Asian population. In 1990, the average family size for the Hmong population was 6.3 persons.

Table 16. Family and Household Characteristics of Southeast Asian Population in Wisconsin, 1990

Family Characteristic	All SE Asian	Hmong	Laotian	Cambodian	Thai	Vietnamese
Persons per family	5.8	6.3	5.4	4.9	3.2	4.2
Total number of families	3,778	2,536	642	97	63	440
Families with children						
Percent	87%	91%	85%	84%	67%	69%
(Number)	3,287	2,311	549	82	42	303
Percent married-couple families	86%	88%	86%	66%	57%	81%
Percent with female head	11%	11%	10%	29%	40%	16%

Source: U.S. Bureau of the Census

The living arrangements of children (under age 18) among Southeast Asian families parallel the family types found most frequently among this group. Few children live outside the two-parent family structure, although Southeast Asians other than Hmong are somewhat more likely to live in a one-parent family (Table 17). If children do not live with parents, then they are likely to live with another relative.

Table 17. **Living Arrangements of Persons Less than 18 Years, Southeast Asian Population Wisconsin 1990**

	All SE Asian	Hmong	Laotian	Cambodian	Thai	Vietnamese
Number of Persons Less than 18 Years	13,152	9,960	1,895	260	124	913
In household of parent(s)	94%	94%	94%	91%	94%	88%
In married-couple family	84%	86%	84%	65%	73%	73%
In female-headed family	8%	7%	8%	23%	13%	12%
In grandparent's household	1%	1%	2%	1%	2%	2%
In other relative's household	3%	3%	3%	4%	0	4%
In non-relative's household	1%	1%	1%	5%	3%	2%

Source: U.S. Bureau of the Census

Living Arrangements Among Older Adults

According to information provided to the U.S. Census in 1990, a majority of older people live in the community with a spouse or other relatives. Living alone is the second most prevalent living arrangement among persons aged 65 and older, followed by residency in a nursing home or other institution.

Within the 65-and-older population, living arrangements tend to change as people grow older, and differ markedly for men and women. With advancing age, the proportion of older people who live with a spouse or other family members declines, to a large extent reflecting the increasing likelihood with age of being widowed.

At all older ages, men are more likely than women to be living with a family member, usually a spouse; women experience more variation in living arrangements. This difference results primarily from the shorter life expectancy of men compared with women and the tendency of women to marry men older than themselves; women are much more likely to be widowed and much less likely to remarry.[1] In 1990, about 83 percent of Wisconsin men aged 65 to 74 were living with a spouse or other family members; this proportion was 42 percent among men aged 85 and older. Among women, the corresponding proportions were 65 percent at ages 65-74 and just 21 percent at ages 85 and above.

One measure often used to estimate the potential need for supportive services in the older population is the proportion of persons who live alone. Persons age 65 and over who live alone tend to be older (concentrated in the 75-to-84-year age group), widowed and female. In 1990, about 39 percent of all Wisconsin women aged 65 and over were living alone, according to U.S. Census information. In contrast, just 16 percent of men aged 65 and over were living alone.

In 1990, 61 percent of older adults (ages 65 and over) in Wisconsin were living with a spouse or other relatives, 29 percent were living alone, 7 percent were residing in a nursing home or other institution, and 3 percent had some other living arrangement (Table 18). These proportions varied greatly by age subgroup, however. The proportion living with family members was lower in each successively older age group: from 73 percent among adults ages 65-74, to 52 percent of adults ages 75-84, to just 29 percent of those aged 85 and above. The percentage living alone increased from 23 percent of those 65-74, to 38 percent of those 75-84; the proportion did not increase further among the oldest adults (37 percent among those 85 and over). The percentage living in a nursing home or other institution was 2 percent of persons aged 65-74 and 8 percent of those 75-84; it was sharply higher (31 percent) among the 85-and-over group.

Table 18. Living Arrangements for All Older Persons in Wisconsin, 1990

	Percent in Age Group			
Living Arrangements	65+	65-74	75-84	85+
Living with spouse or other relatives	61%	73%	52%	29%
Living alone	29	23	38	37
Living in a nursing home or other institution	7	2	8	31
Other	3	2	2	3
	100%	100%	100%	100%
(Number)	(651,221)	(358,419)	(218,509)	(74,293)

Source: U.S. Bureau of the Census

In 1990, living arrangement patterns among older adults in Wisconsin varied according to race/ethnicity. Nevertheless, the most common arrangement in all groups was living with a spouse or other relative: this was the living arrangement for a majority of those 65 and older in every racial/ethnic group. This was also true across age subgroups of the older population, except for the oldest (85 and over); in general, it was these oldest elderly that had the greatest variation in living arrangements. Among 85-year-olds as a whole, only 29 percent were living with family members; the pattern was distinctly different among minority groups examined. Roughly half of African Americans, American Indians, and Hispanics aged 85 and over were living with family members; the proportion was even higher among Asians (66 percent). In general this difference reflects lower levels of nursing home use among the oldest members of minority groups, compared to the 85-and-over population as a whole. The proportion of older adults living alone was more consistent, varying in most racial/ethnic groups between 21 and 38 percent, depending on age. The exception was among Asian older adults, who had markedly lower rates of living alone in every age subgroup; just 8 percent of 85-and-older Asians were living alone in 1990, compared with 37 percent in the total 85-and-over population.

African Americans. According to findings from the U.S. Census, in 1990 there were 10,657 black persons aged 65 and older in Wisconsin. In 1990, 59 percent of African Americans aged 65 and over in Wisconsin were living with a spouse or other relatives; 31 percent were living alone; 5 percent were living in a nursing home or other institution, and 5 percent had other living arrangements (Table 19). These overall proportions were roughly similar to those for all older persons in Wisconsin.

Comparing age subgroups, black elderly persons differed in important ways from the elderly population as a whole. The proportion living with family, although roughly similar overall, was lower among the "young-old" (63 percent vs. 73 percent among all persons in the age group); the same among persons aged 75-84 (52 percent); and sharply higher among the "oldest-old", aged 85 and over (48 percent vs. 29 percent). The greatest difference was seen in the 85-and-over group: compared with all persons in the age group, blacks aged 85 and older were more likely to be living with family members (48 percent vs. 29 percent), and less likely to be living alone (28 percent vs. 37 percent) or in a nursing home (21 percent vs. 31 percent).

Table 19. Living Arrangements for Older African Americans in Wisconsin, 1990

	Percent in Age Group			
Living Arrangements	65+	65-74	75-84	85+
Living with spouse or other relatives	59%	63%	52%	48%
Living alone	31	29	36	28
Living in a nursing home or other institution	5	3	7	21
Other	5	5	5	3
	100%	100%	100%	100%
(Number)	(10,657)	(6,908)	(2,952)	(797)

Source: U.S. Bureau of the Census

American Indians. According to results of the 1990 U.S. Census, there were 1,985 American Indian adults aged 65 and older in Wisconsin. In 1990, about 62 percent of American Indians age 65 and older lived with a spouse or other family members; this proportion was highest among the "young-old" (68 percent) and lowest among the "old-old" (45 percent) (Table 20).

Table 20. Living Arrangements for Older American Indians in Wisconsin, 1990

	Percent in Age Group			
Living Arrangements	65+	65-74	75-84	85+
Living with spouse or other relatives	62%	68%	52%	45%
Living alone	28	26	33	31
Living in a nursing home or other institution	6	3	10	16
Other	4	3	5	8
	100%	100%	100%	100%
(Number)	(2,011*)	(1,269)	(605)	(137)

Source: U.S. Bureau of the Census
* Includes 26 Eskimo and Aleut.

About 31 percent of the oldest American Indians in Wisconsin, ages 85 and over, were living alone in 1990. This largely reflects the lower likelihood of nursing home use by American Indians, especially at the oldest ages, compared with the total population of aged adults in Wisconsin. In 1990, about 16 percent of American Indians age 85 and over were in a nursing home or other institution, compared with 31 percent of the total population in this age group. American Indians in this oldest age group were also more likely to be living with a spouse or other relatives, compared with all persons 85 and over (45 percent vs. 29 percent).

Asians. The U.S. Census enumerated 1,536 Asians aged 65 and older in Wisconsin in 1990. Older Asians in the state were a widely diverse group, comprising 10 categories of ethnic origins. Asian ethnicities with at least 100 persons aged 65 and over in the state were Hmong (427 adults aged 65 and over), Chinese (325), Japanese (185), Filipino (163), and Asian Indian (147). Others were Korean (99), Laotian (73), Vietnamese (65), Cambodian (11), and Thai (5).

In general, living arrangements among older Asians varied the most from the pattern in the older population as a whole. They were much more likely to live with a spouse or other family members, with the difference greatest in the oldest age groups. Conversely, elderly Asians were least likely of all to live alone. Just 10 percent of Asians ages 65 and over were living alone in 1990 (Table 21), compared with 29 percent of the total population aged 65 and over. At age 85 and older, the proportion of Asians living alone was only 8 percent (versus 31 percent in the 85-and-over population as a whole).

Table 21. Living Arrangements for Older Asians in Wisconsin, 1990

Living Arrangements	Percent in Age Group 65+	65-74	75-84	85+
Living with spouse or other relatives	84%	87%	79%	66%
Living alone	10	10	11	8
Living in a nursing home or other institution	3	1	4	24
Other	3	2	6	2
	100%	100%	100%	100%
(Number)	(1,578*)	(1,092)	(410)	(76)

Source: U.S. Bureau of the Census
* Includes 42 Pacific Islanders.

Compared with the total 65-and-over population, older Asians were less likely to be living in a nursing home or other institution. About one-quarter (24 percent) of the small number of Asians in the oldest age group (85 and over) were reported to live in a nursing home or other institution; the comparable proportion in the general population was 31 percent.

Hispanics. According to the U.S. Census, the Wisconsin Hispanic population aged 65 and over numbered 3,362 in 1990. By national origin or ancestry, these older Hispanic adults identified themselves as Mexican (1,927), Puerto Rican (541), Cuban (103), or "other Hispanic" (791).

According to the 1990 Census, elderly Hispanics in Wisconsin differed from the total elderly population in that they were less likely to reside in a nursing home and more likely to live with family members. This difference was most pronounced at the oldest ages, 85 and above, when just 10 percent of Hispanics were living in a nursing home or other institution (Table 22), compared with 31 percent of the general 85-and-older population.

Table 22. Living Arrangements for Older Hispanics in Wisconsin, 1990

Living Arrangements	Percent in Age Group 65+	65-74	75-84	85+
Living with spouse or other relatives	67%	73%	57%	51%
Living alone	26	21	35	33
Living in a nursing home or other institution	3	2	3	10
Other	4	4	5	6
	100%	100%	100%	100%
(Number)	(3,362)	(2,171)	(919)	(272)

Source: U.S. Bureau of the Census

At the ages of 65-74 (the youngest elderly), Hispanics were just as likely as the total population in this age group to be living with a spouse or other relatives (73 percent in each group). The percentage diverged with age, however, so that by age 85 and above, 51 percent of Hispanics were living with family, compared with just 29 percent of all adults aged 85 and over.

Overall, about 26 percent of Hispanics aged 65 and over were living alone in 1990. The proportion living alone was lowest among the youngest elderly, with 21 percent of Hispanics aged 65-74 living alone; and highest among the "middle" elderly, with 35 percent of Hispanics aged 75-84 living alone. Thirty-three percent of the oldest Hispanics, ages 85 and over, lived alone in 1990. These percentages were not greatly different from the pattern in the total elderly population.

ECONOMIC CHARACTERISTICS

POVERTY AND INCOME

HEALTH INSURANCE

Poverty and Income

Lack of economic resources relates to higher mortality, morbidity and disability. Many effects of poverty can influence health, including compromised nutrition, crowded or unsafe housing conditions, and limited access to health care. Along with education and occupation, income is a basic measure of socioeconomic position that has been shown to influence the risk of illness and death from a wide variety of causes across the age spectrum.[2]

Some health status differences between minority populations and the total population may largely reflect differences in economic resources between the groups. For example, comparisons between minority women and the total population show a higher incidence of low birthweight infants and less frequent use of prenatal care among minority women. These differences are reduced significantly or disappear when comparisons are made between women of similar income levels. In this case, racial differences in health outcomes largely reflect economic status and access to resources.

High rates of poverty, as defined by the U.S. Census Bureau,[a] exist for several racial and ethnic minority groups in Wisconsin, notably the black, Native American, and total Asian populations.[b] While high poverty rates in a group can have far-reaching implications, the usefulness of poverty rates for health planning diminishes if this summary measure becomes inappropriately generalized. High poverty rates among a group do not mean that a group is poor in terms of culture, traditions, spirit, systems of mutual help and care, or many other resources that contribute positively to the community. To describe high poverty rates or negative health-related implications of high poverty rates for a group does not mean that lack of economic resources overrides a cultural view of the world which is important to group members.

Inappropriate generalizations from poverty rates can also occur through combining diverse people into the racial and ethnic categories available for description. For example, the availability of poverty data only for aggregations of all Asians and of all Hispanics is a major limitation. Prior descriptions of these groups emphasize diversity among distinct national-origin groups of Asians and Hispanics; additional variation exists associated with acculturation and the length of time since immigration.

Finally, although high poverty rates exist in many minority groups, economic diversity also exists within the groups. The proportion of all minority households whose 1989 annual income was below $10,000 was about twice as large as the state average. However, approximately one-fourth of black, American Indian, Asian, and Hispanic households in Wisconsin reported incomes between $25,000 and $50,000 in the 1990 Census. About 10 percent of black, American Indian and Hispanic households reported higher incomes. In the Wisconsin population as a whole, about 20 percent of households had incomes above $50,000.

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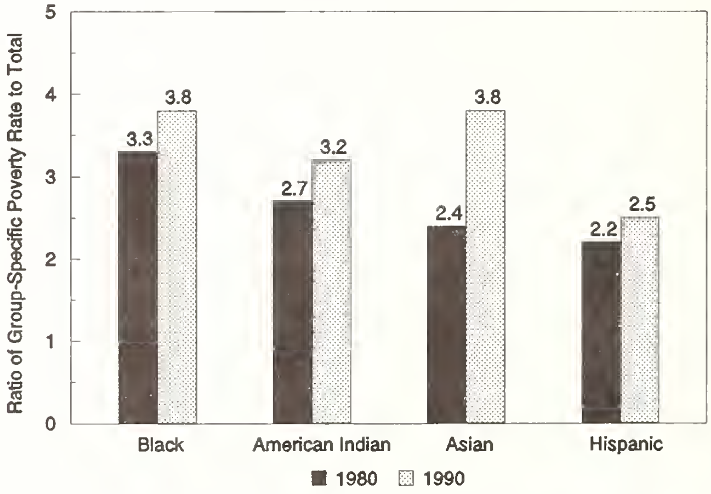
[a] The poverty rate is the percentage of families or individuals whose annual income falls below a threshold specified by the Federal Office of Management and Budget. The thresholds vary by family size and composition and are updated annually for inflation. In 1989, the average poverty threshold for a family of four was $12,675.

[b] In this section, 1990 poverty rates do not disaggregate the American Indian population (i.e., the American Indian category includes a very small number of persons who identified themselves as Eskimo or Aleutian), the Asian population, or the Hispanic-origin population.

In 1990,[a] 11 percent of all persons in Wisconsin were poor. The majority of all poor people in Wisconsin report their race as white and do not belong to the racial or ethnic minority groups addressed in this report. Nevertheless, the percentage in poverty in those groups was much higher than for the state as a whole: 41 percent of the black population, 35 percent of the Native American population, and 41 percent of the Asian population were poor. The poverty rate for the Hispanic population (27 percent) was lower than for other minority groups, but two-and-a-half times the state average.

Poverty increased during the 1980s in each of the racial/ethnic groups examined in this report. The percentage increase was greatest for the category of all Asians, due largely to immigration of Hmong during the early part of the decade. During the 1980s, the poverty rate for the total state population also increased (from 9 percent to 11 percent); however, the increases in poverty rates among minority groups during the 1980s were much greater than the increase for the total state. This meant that the poverty disparity increased for each of the minority groups compared with the state as a whole (Figure 4). In 1980, black residents of Wisconsin were 3.3 times more likely to be poor as were all Wisconsin residents; by 1990, the disparity had increased to 3.8. Similar changes occurred in the other groups: from 2.7 to 3.2 among American Indians; from 2.4 to 3.8 among Asians; and from 2.2 to 2.5 among Hispanics.

Figure 4. Ratio of Race- and Ethnic-Specific Poverty Rates to Statewide Poverty Rate,* Wisconsin, 1980 and 1990



Source: Wisconsin Center for Health Statistics, data from the U.S. Census of Population for 1980 and 1990.

*Ratio is the poverty rate in each racial/ethnic group divided by the total state poverty rate.

Children are especially likely to live in poverty, regardless of race or ethnicity. Poverty is particularly acute among preschool minority children. In 1990, more than half of all black, American Indian and Asian children under 5 years of age were in poverty (Table 23). Poverty rates were somewhat lower for Hispanic children (40 percent), but well above the state average of about 18 percent. In all groups, the child poverty rates were somewhat less for older children than for the youngest children. Even among older children, however, poverty rates among minority children ranged from 3 to 6 times greater than the state average.

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[a] The 1990 Census, conducted in April of 1990, used 1989 income to determine poverty status. Similarly, the 1980 Census based its determination of poverty on 1979 income. These constitute the bases for references to poverty in 1990 and 1980 used in this report.

Table 23. Percent of Children in Poverty* by Age, Race and Hispanic Origin, Wisconsin 1990

	Total Less than 18	Less than 5 years	5 years	6 - 11 years	12 - 17 years
All persons	15%	18%	16%	15%	12%
Black	56	62	61	58	47
American Indian	46	55	53	45	37
Asian	49	55	52	49	39
Hispanic	34	40	34	33	28

Source: U.S. Bureau of the Census

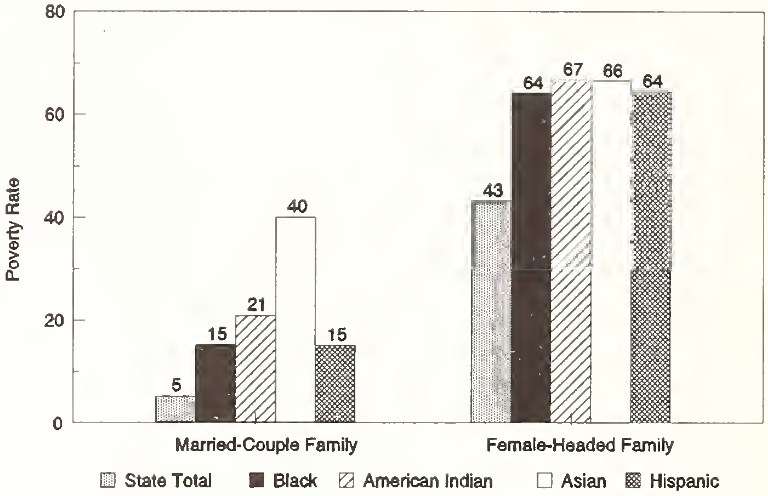
* Based on household size and 1989 household income as reported to the 1990 U.S. Census.

Despite the very high child poverty rates among minority groups, it is a myth that most poor children belong to minority groups. According to the 1990 Census, three-fourths of all poor children in Wisconsin were white.

Children who live in married-couple families more often benefit from two incomes and are less likely to live in poor families. In all groups, two-parent families with children have a lower poverty rate than other families with children. Income is above the poverty threshold in the majority of two-parent families with children in black, American Indian and Hispanic families. Among all families with children and two parents present, poverty rates are highest for Asians (40 percent).

Children living in families with a female householder (no spouse present) have traditionally experienced higher poverty rates than other children. In the last ten years, two trends have combined to exacerbate the prevalence of children in poverty: Between 1980 and 1990, the number of female-householder families with children (under age 18) increased by 30 percent, from about 89,000 to 115,000 such families. In addition, the proportion of these families with incomes below the poverty level also increased during the decade, from 35 to 43 percent. In 1990, about two-thirds of all female-headed families in the minority groups discussed here had incomes below poverty (Figure 5).

Figure 5. Percent of Families with Children and Incomes In Poverty By Race/Ethnicity and Family Type, Wisconsin 1990

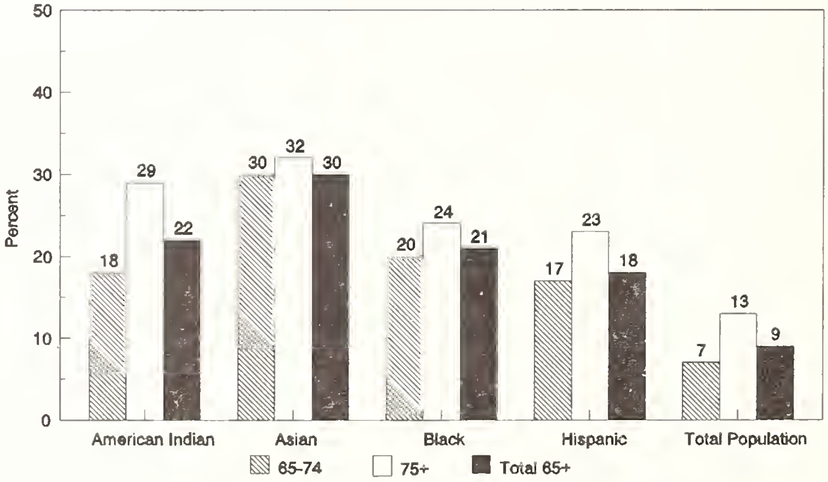


Source: Wisconsin Center for Health Statistics, data from 1990 U.S. Census of Population.

Persons in the working ages 18 to 64 and the youngest elderly, ages 65 to 74, are least likely to have incomes below the poverty level. Data from the 1990 Census showed this statewide and for black, American Indian, Asian and Hispanic people. Minority poverty rates at these ages were, however, well above the statewide average.

During the last two decades, the statewide poverty rate has been declining for the total population age 65 and over. This trend has not extended, however, to older adults in minority groups. Between 1980 and 1990, the proportion of older minority people (65 and over) with incomes below poverty increased. For the older population as a whole, and in each minority group, the percentage living in poverty was higher among adults aged 75 and older than it was among the youngest elderly, those aged 65-74 (Figure 6).

Figure 6. Percent of Older Adults In Poverty, By Race and Ethnicity, Wisconsin 1990



Source: U.S. Bureau of the Census, 1990 Census of Population, General Population Characteristics: Wisconsin. 1990 CP-1-51, June 1992.

Several factors account for the much higher rates of poverty found among older persons belonging to minority groups. First, minority elders generally held the very lowest paying jobs when they were employed. Individuals in these jobs were often not covered by Social Security. Having been compensated at very low levels, they are eligible for correspondingly low pension benefits. Second, the Supplemental Security Income Program, established in 1974 in part to provide additional income to older persons whose incomes were below an established minimum level, has not reached many persons who are eligible for these benefits.[3]

African Americans. The 1990 black poverty rate of 41 percent was 12 percentage points higher than ten years earlier when it was 29 percent. Poverty increased in all major age groups of the black population in Wisconsin. The largest increase occurred among children, with a poverty rate of 56 percent in 1990 compared to 39 percent in 1980.

Poverty rates for older blacks are lower than at younger ages (Table 24). In 1990, 21 percent of blacks age 65 and over had incomes below poverty, compared to 18 percent in 1980. Although this increase was less than the increase in poverty for younger black people, the increase in elderly poverty contrasts with a decline in statewide elderly poverty. Data for 1990 show that the proportion in poverty was somewhat higher among blacks age 75 and over (24 percent) than it was among the youngest elderly (20 percent).

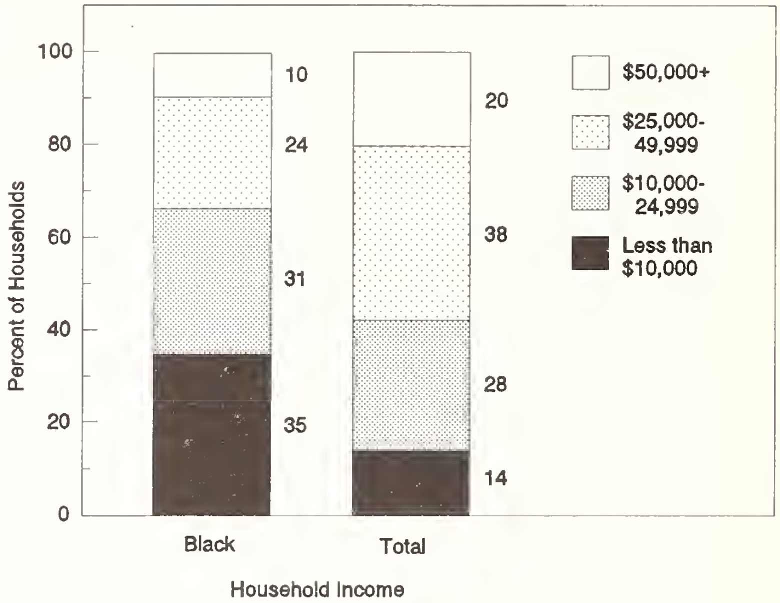
Table 24. Black Poverty Rates by Age, Wisconsin 1980 and 1990

	1980	1990
Total	29%	41%
Less than 18 years	39	56
18 - 64 years	22	31
65+ years	18	21

Source: U.S. Bureau of the Census

The percentage of low-income households is much greater among blacks than the statewide average (Figure 7). There is also, however, a sizable middle class. About one-third of black households reported 1989 income at $25,000 or above, and about 10 percent reported $50,000 or above.

Figure 7. Percent Distribution of Households by Household Income, Black and Total Population, Wisconsin 1990



Source: Wisconsin Center for Health Statistics, data from 1990 U.S. Census of Population.

American Indians. In 1990, 35 percent of all American Indians in Wisconsin lived in households where income was less than the official poverty thresholds (Table 25). This compares to the 1980 rate of 23 percent. The 1990 poverty rate for American Indian preschool children exceeded 50 percent (55 percent). Poverty was most prevalent among mother-only families with children. More than three-fourths (78 percent) of American Indian mother-only families with both preschool and school-age children were poor.

Table 25. American Indian Poverty Rates by Age, Wisconsin 1980 and 1990

	1980	1990
Total	23%	35%
Less than 18 years	27	46
18 - 64 years	21	29
65+ years	16	22

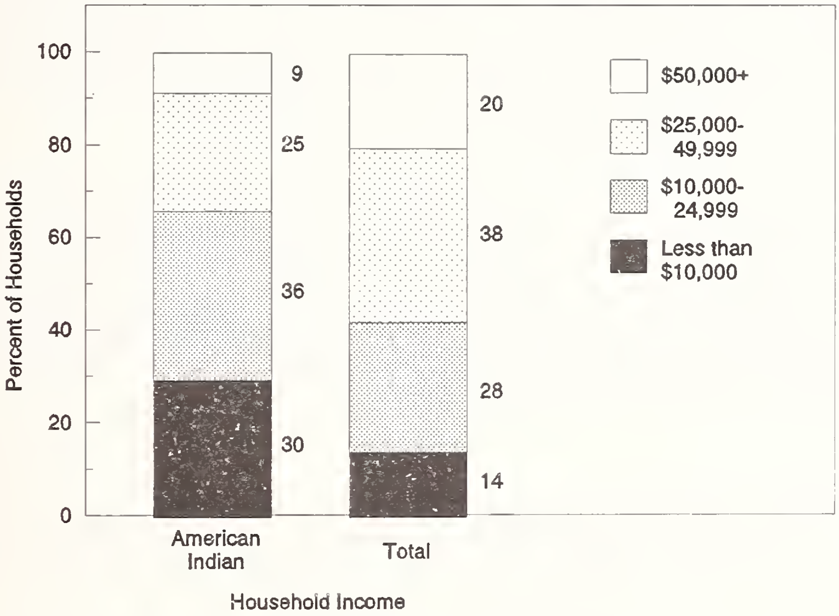
Source: U.S. Bureau of the Census

Like other children, American Indian children were likely to benefit economically in families that included both parents. In 1990, about 80 percent of American Indian married-couple families with only preschool-age children had incomes above poverty. With additional children, this proportion declined. About 68 percent of married-couple families with both preschool and school-age children were above the poverty threshold (i.e., "not poor").

As in other groups, poverty is less frequent for middle-aged and older American Indians. In 1990, the poverty rate for American Indians aged 18 to 64 was 29 percent. At ages 65 to 74 and 75+, poverty rates were 18 percent and 29 percent. Between 1980 and 1990, the proportion of American Indians ages 65 and over in poverty increased from 16 percent to 22 percent.

About one-third (34 percent) of American Indian households in Wisconsin had 1989 incomes of $25,000 and above, compared to a statewide average of 58 percent (Figure 8). Although most American Indian households reported incomes of less than $50,000, 9 percent reported incomes of $50,000 or higher.

Figure 8. Percent Distribution of Households by Household Income, American Indian and Total Population, Wisconsin 1990



Source: Wisconsin Center for Health Statistics, data from 1990 U.S. Census of Population.

Asians. As a group, Asians in Wisconsin had a 1990 poverty rate of 41 percent (Table 26). About half of all Asian children under age 12 lived in poor families in 1990. For ages 12 to 17 and 18 to 64, poverty rates were 19 percent and 36 percent.

Table 26. Asian Poverty Rates by Age, Wisconsin 1980 and 1990

	1980	1990
Total	21%	41%
Less than 18 years	21	49
18 - 64 years	21	36
65+ years	15	30

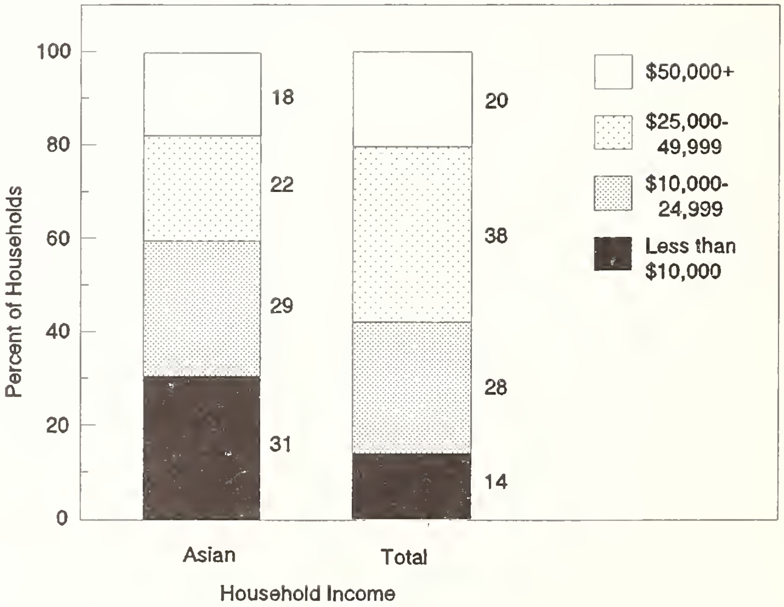
Source: U.S. Bureau of the Census

Among Asians 65 years of age and older in Wisconsin, the rate of poverty nearly doubled between 1980 and 1990, from 15 to 30 percent. This increase at least partly reflects the in-migration of the Hmong, who as a group had relatively few monetary resources when they came to this country. This latter explanation also probably accounts for the similarity by age in 1990 poverty rates among older Asians: the proportion in poverty was similar among Asians aged 65-74 (30 percent) and Asians aged 75 and over (32 percent). All other groups showed distinctly higher rates of poverty in the oldest age group, indicating the increasing likelihood of being widowed and diminishing financial resources as the oldest ages are reached.

The heterogeneity of the Asian population masks the pervasiveness of poverty in particular groups of Asians. U.S. Census data on poverty rates by national origin are not available at this writing. However, the highest Asian poverty rates in Wisconsin exist primarily in those counties where Hmong and Laotians represent much of the Asian population. In 1990, Asian poverty rates were around 75 percent in Manitowoc, Green Lake and Eau Claire counties, where most of the Asian population was Hmong or Laotian. In Brown, La Crosse and Marathon counties, which also include concentrations of Hmong and Laotian populations, the Asian poverty rate was around 60 percent.

The distribution of household income among the total Asian population also reflects the diversity of this group. A portion of the Asian population in Wisconsin was concentrated at the lower end of the income distribution, with about 31 percent reporting a 1989 income of less than $10,000 (Figure 9). In comparison to other minority groups, however, the proportion of all Asian households with incomes of $50,000 or more (18 percent) was more similar to the statewide average (20 percent). The proportion of all Asian households with a 1989 income of $100,000 or more was greater than the statewide average (6 percent among Asian households compared to 3 percent statewide).

Figure 9. Percent Distribution of Households by Household Income, Asian and Total Population, Wisconsin 1990



Source: Wisconsin Center for Health Statistics, data from 1990 U.S. Census of Population.

Hispanics. Among Hispanics in Wisconsin, the 1990 poverty rate of 27 percent (Table 27) was up from 19 percent in 1980. Poverty rates for children were somewhat lower than for children in other minority groups, but well above the poverty rates for the state as a whole. Over one-third (36 percent) of all Hispanic children under age 12 lived in poor families in 1990. Similar to other groups, middle-aged and older Hispanics were less likely to live in poverty than younger people.

Table 27. Hispanic Poverty Rates by Age, Wisconsin 1980 and 1990

	1980	1990
Total	19%	27%
Less than 18 years	22	34
18 - 64 years	16	22
65+ years	13	18

Source: U.S. Bureau of the Census

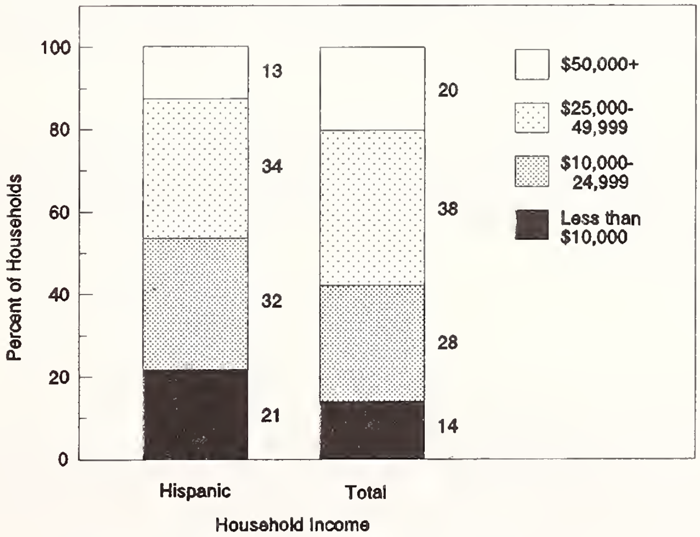
Among children living in married-couple families, Hispanic poverty rates were similar to those for children in married-couple black families in the state, and above the total state rate.

Poverty is high in Hispanic female-headed families. In 1990, 64 percent of all Hispanic mother-only families with children under age 18 were poor.

The rate of poverty among elderly Hispanics in Wisconsin increased during the 1980s, from 13 percent to 18 percent of Hispanics aged 65 and over. In 1990, 17 percent of Hispanics aged 65-74 were living in poverty; the proportion in poverty was 23 percent among Hispanics ages 75 and over.

Similar to the description of poverty among Asians in Wisconsin, the aggregation of all Hispanic national-origin groups covers important differences within the Hispanic population. Because Mexican-origin people represent about 62 percent of all Hispanics in Wisconsin, the overall Hispanic poverty rate largely reflects the family incomes of that group (Figure 10).

Figure 10. Percent Distribution of Households by Household Income, Hispanic and Total Population, Wisconsin 1990



Source: Wisconsin Center for Health Statistics, data from 1990 U.S. Census of Population.

Health Insurance

Health insurance coverage is an important factor in health status, since it increases the likelihood of receiving preventive care (such as immunizations and screenings), as well as early treatment that can lessen the seriousness and long-term complications of many conditions. Health insurance or health care coverage includes both public sources of payment (chiefly Medicare and Medical Assistance) and private insurance.

According to Wisconsin Family Health Survey results for 1990-1992, about 12 percent of the total Wisconsin population under age 65 was without health insurance (either public or private) at the time of the survey interview. The proportion uninsured was somewhat lower among children: 10 percent among children aged 0-17, compared with 13 percent among adults ages 18-64. The proportion uninsured was markedly higher among persons in minority groups (Table 28).

Table 28. Percentage with No Health Insurance, By Age and Race/Ethnicity, Wisconsin 1990-1992

Race/Ethnicity (Number in sample)	Ages 0-17	Ages 18-64	Total Ages 0-64
Total Wisconsin (19,234)	10%	13%	12%
Black (795)	21%	22%	22%
Asian (194)	14	22	19
American Indian (125)	*	22	21
Hispanic (321)	12	23	18

Source: Combined file of 1990-1992 Family Health Survey, Center for Health Statistics
* Sample too small to report results for this group.

Wisconsin Family Health Survey results for 1991 suggest that the poor and near-poor in Wisconsin are more likely to be without health insurance, compared with the rest of the state population. While 24 percent of the poor and 15 percent of the near-poor population were uninsured in 1991, only 7 percent of the nonpoor were uninsured.[a]

According to findings from the 1990 Prenatal Care Study, which surveyed a sample of Wisconsin women who gave birth in 1990, 50 percent paid for prenatal care with private insurance; 18 percent with a combination of private insurance and self-payment; 6 percent with self-payment only; 20 percent with Medical Assistance; and 6 percent with some other source(s) of payment. Half of all women who gave birth in 1990 reported a household income below $25,000 per year; nearly a quarter had incomes of less than $10,000 per year.

There is some evidence that uninsured persons delay needed health care due to inability to pay. The 1991 Behavioral Risk Factor Survey found that 20 percent of uninsured adults in Wisconsin reported they had not seen a doctor when needed during the past year due to cost; only 6 percent of insured adults reported this deferment of health care.

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[a] Poverty status was determined according to federal poverty guidelines, using reported household income for 1990 and number of household members. Households below the federal poverty level are classified as poor; households with income between 100 and 199 percent of the federal level are classified as near-poor.

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PRENATAL AND INFANT HEALTH

Introduction

Everyone benefits when society's youngest members are nurtured and protected. Babies are most likely to be born healthy and to thrive in a society that values health for all ages, because regular preventive health care and health-promoting behaviors will protect the health of those who will be parents in the future. Health care for any young person can be thought of as preconceptional care; regular health care before and during pregnancy is especially important in persons who have chronic conditions such as diabetes, and in those whose health is put at risk by poverty and related factors.

Once a pregnancy is established, prenatal care is vital in identifying potential medical and other risks for the pregnancy, and providing education and support as the potential mother seeks to make any changes needed to safeguard her health and that of her baby. Pregnancy can be a "window of opportunity," during which motivation to change behavior is high.

The first year of life is a time of tremendous change, both in terms of physical growth and development and as the baby becomes aware of and learns to trust its surroundings. Each baby develops at its own pace, but all babies need caring adults who respond to their physical needs and their developing capacities for human interaction and affection. Increasingly throughout the first year, babies also need to play and to explore their surroundings, while protected by loving adults.

The common milestones of infancy are sometimes affected by health problems that begin at birth or even earlier. Infants who are born prematurely, or at weights that put them at high risk for a variety of serious health problems, also tend to be those who are at higher risk of dying in the first year of life. Low birthweight, infant mortality, and related health problems are in many instances preventable problems whose incidence in a population falls as more resources are directed to care provision and outreach. Prenatal care and related care coordination services are most effective for women whose infants are at special risk.

Poverty is a major risk factor for death and disability in infancy. Women of all races who live in poverty have higher rates of low birthweight and lower levels of prenatal care.[1] [2] Conditions that often accompany poverty, such as malnutrition, small stature, lack of education, psychological and physical stress, and lack of insurance, are all associated with poorer birth outcomes.[3] Health outcomes for both individuals and populations may vary with the length and severity of exposure to poverty.

This chapter presents findings for Wisconsin about measures of maternal and infant health among minority populations in the state. It addresses prenatal care, low birthweight, other birth characteristics, infant mortality rates, and leading causes of infant death. It also describes some of the efforts underway in Wisconsin to improve the likelihood of a healthy pregnancy, safe birth, and thriving infancy.

PRENATAL CARE

Prenatal Care

The earlier in pregnancy prenatal care begins, the better the chance of a healthy birth. Early prenatal care can identify factors that put the mother and baby at risk, including medical conditions (such as diabetes, anemia, hypertension, genetic anomalies, poor nutritional status, previous obstetric complications, previous births that were premature or low-birthweight, closely spaced pregnancies), life-style indicators (smoking, alcohol and/or drug use, stress), and environmental hazards (toxins and/or conditions in the home and work environment, violence). Women who receive no prenatal care are three times as likely to have a low-birthweight infant; 80 percent of women at high risk for low birthweight could be identified at a first prenatal care visit.[4] Once women at special risk are identified, early intervention can begin; successful prenatal care programs have reduced infant deaths and low birthweight among high-risk women by one-fourth to two-thirds.[5] For high-risk women, the traditional medical visit may not be enough for comprehensive risk assessment.

Studies on initiation of prenatal care have found that "barriers to prenatal care are often related to being poor."[6] Lack of insurance or other source of payment, transportation, and child care are often cited by women as reasons why they did not get early prenatal care.[7] [8] [9] Characteristics of women who tend to receive later prenatal care include: young age (less than 20), nonwhite, not high school graduates, unmarried, with other and/or closely-spaced children.[10] [11] Institutional barriers to early prenatal care include lack of programs and providers; difficult application process for publicly funded programs; lack of awareness of existing programs; and programs whose hours, location, and providers are not sensitive to the needs of different cultures and families surviving poverty.[12] [13] [14] [15]

Barriers to Prenatal Care

- Financial
  - Poverty
  - Lack of insurance
  - Too few providers serving Medical Assistance or non-paying patients
  - Difficult to apply for assistance
- Institutional
  - Too few providers
  - Unaware of prenatal care programs
  - Lack of cultural awareness by providers
  - Inconvenient or inaccessible hours and location
- Facilitating
  - Lack of child care
  - Lack of transportation
- Attitudinal
  - Unaware of pregnancy
  - Ambivalent about pregnancy
  - Perceived importance of prenatal care
  - Lack of social support
  - Fear of identification of unhealthy behaviors
  - Fear of being judged
  - Stress, depression, denial

Source: Institute of Medicine, 1988.

Apart from the institutional and financial barriers to initiating early prenatal care, there are other less tangible but equally important barriers. Studies have found that lack of awareness of pregnancy, whether the pregnancy was planned, and ambivalent feelings about the pregnancy can be major factors in not seeking early prenatal care.[16] [17] [18] [19] The reasons for a delayed recognition of pregnancy are varied. Some delays may be attributed to lack of education about the early signs of pregnancy. In other cases, it is an ambivalence about the pregnancy itself: if you don't know whether you want a child, it is easier to ignore the signs. Another reason may be that there are too many other basic needs to be met, including other children to care for, before a woman can think about her own health or changes in it.

Although the medical community has established a standard for prenatal and delivery care, all cultures do not necessarily embrace this standard. Health care may be sought only in the case of acute illnesses, often as a last resort after traditional home or folk remedies have been exhausted. Pregnancy is considered a natural life event, not an illness. Some cultures are not familiar with the idea of "preventive" health measures, such as prenatal care. Women simply follow family custom and example for behavior while pregnant. They have either seen healthy babies as a result of that behavior or are not aware of a possible connection between lack of prenatal care and a poor birth outcome. Women from some cultures may be uncomfortable with male health care providers and perceive prenatal care questioning and examinations as intrusive. Strong beliefs in traditional healing practices should also be considered. When families with these strong cultural beliefs encounter a system in which health care providers may not recognize, understand, or empathize with those beliefs, the likelihood of participation becomes low.

Another way to view the utilization of prenatal care is to consider it as one of a number of beneficial maternal behavior characteristics that promote positive birth outcomes. This suggests that women who seek early prenatal care may also have a set of baseline behaviors that will have a positive effect on their pregnancy; these behaviors may include adequate diet, abstaining from drugs, alcohol, and tobacco, and seeking and utilizing social support. In communities where formal prenatal care is not often used, favorable birth outcomes may be attributable to generally healthy behaviors, such as low levels of substance abuse and favorable nutritional status before and during pregnancy.

The role of "social connectedness" and support systems in seeking early prenatal care is also being evaluated.[20] [21] It appears that the more support a pregnant woman has, the more comfortable she becomes in making decisions about the pregnancy, including the use of prenatal care. The support may be provided by the father of the baby, parents, extended family and friends, or the community. It therefore becomes important to reach out to the whole community when discussing the importance of early prenatal care in preventing low birthweight, birth disorders, and infant death.

Providing early, high-quality prenatal care is an investment in the future of the nation; it is also cost-effective. The Institute of Medicine found in a 1985 study that for every $1.00 spent on prenatal care, $3.38 is saved.[22] The National Committee to Prevent Infant Mortality estimated in 1988 that the hospital costs for low-birthweight infants were close to $2 billion annually, while the costs of providing early prenatal care to all women not receiving it would be as little as $500 million.[23] Low birthweight characterized 6.1 percent of Wisconsin births in 1991 but 49 percent of newborn hospital charges in that year; hospital charges for Wisconsin's low-birthweight newborns totalled nearly $61 million in 1991.

National Findings

According to national figures for 1989, 75 percent of mothers giving birth that year began prenatal care in the first trimester. The proportion receiving first-trimester care was 60 percent among black mothers, 60 percent among Hispanic mothers, and 58 percent among American Indian mothers.[24]

Wisconsin Findings

Overview. In Wisconsin, women in ethnic and racial minorities are less likely to begin care in the first trimester and tend to make fewer prenatal visits, compared to statewide percentages (Figure 1).[a] Adequate prenatal care, as described by the American College of Obstetricians and Gynecologists (ACOG), is care begun in the first trimester of pregnancy and includes 13 or more prenatal care visits.

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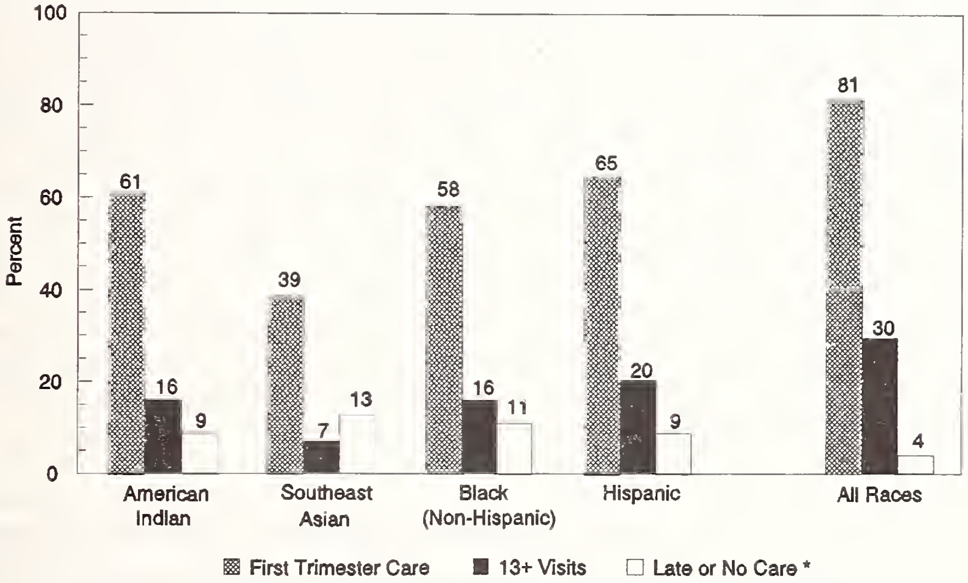
[a] All analysis by race/ethnicity in this chapter is based on the race/ethnicity of the mother.

Among Wisconsin women who gave birth in 1991, 81 percent began prenatal care in the first trimester, 76 percent made 10 or more visits, and 30 percent made the ACOG-recommended 13 visits.[a] No minority group in Wisconsin approached those levels of care. First-trimester care was received by only 58 percent of black women, 61 percent of American Indians, 65 percent of Hispanics and 39 percent of Southeast Asians. Similarly, only 51 percent of blacks, 50 percent of American Indians, 62 percent of Hispanics and 33 percent of Southeast Asians made 10 or more prenatal care visits. Sixteen percent of black and American Indian women, 20 percent of Hispanic women, and 7 percent of Southeast Asian women achieved the ACOG goal of 13 prenatal care visits.

Figure 1. Prenatal Care by Race/Ethnicity, Wisconsin 1991



* No care or care that did not begin until the third trimester.

Source: 1991 Wisconsin Birth Certificate File.

Even when prenatal care is initiated in the first trimester, minority women tend to have fewer prenatal visits. Among all Wisconsin women whose prenatal care began in the first trimester, 85 percent made 10 or more prenatal care visits; the comparable proportion was 70 percent of American Indian women, 60 percent of Southeast Asian women, 71 percent of black women, and 81 percent of Hispanic women.

In 1991, about 4 percent of all women who gave birth in Wisconsin received late (third-trimester onset) or no prenatal care, while the percentages of minority women with late or no prenatal care ranged from 9 to 13 percent.

The 1990 Prenatal Care Survey in Wisconsin asked a sample of women who gave birth in 1990 to identify any barriers they experienced in receiving prenatal care. The top five reasons cited by respondents overall were lack of awareness of the pregnancy (9 percent), length of time to get first appointment (7 percent), not having enough money for care (6 percent), locating a babysitter for other children (5 percent), and lack of transportation (4 percent). Of the top five reasons cited as barriers, comparatively high percentages of all races identified being unaware of the pregnancy and difficulty getting a babysitter.

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[a] Although percentages are sometimes presented in terms of the percent of women giving birth, or the percent of mothers, all percentages in this chapter refer to the percent of live births.

Compared with all respondents, high percentages of blacks and Southeast Asians cited length of time to get the first appointment as a barrier. Blacks, American Indians, and Southeast Asians were more likely to cite transportation as a problem than were women as a whole. Lack of money was cited by a similar percentage in each group (between 5 and 7 percent); the only exception was Southeast Asians, among whom 22 percent reported this to be a problem.

The likelihood of receiving early prenatal care is affected by whether the pregnancy was planned, and the month pregnancy was recognized. Among respondents to the 1990 survey, 60 percent reported that their pregnancy was planned. The proportion of planned pregnancies varied by race and ethnicity. More respondents of Southeast Asian heritage reported a planned pregnancy (73 percent), followed by Hispanic (49 percent), American Indian (42 percent) and black (18 percent).

Of those women who reported the month in which they knew they were pregnant, 48 percent reported knowing in the first month, and 4 percent said they didn't know they were pregnant until the fourth month or later. These proportions also varied by race and ethnicity, with later recognition reported more frequently by women in minority groups. Identification of pregnancy in the first month was reported by 17 percent of American Indian women, 27 percent of Southeast Asian women, 34 percent of black women and 32 percent of Hispanic women. Conversely, the percentages of minority women reporting identification in the fourth month or later was higher for American Indian women (13 percent), Southeast Asian women (16 percent) and black women (10 percent). About 4 percent of Hispanic women reported late recognition of pregnancy, the same as for respondents overall.

Of the women whose babies were born prematurely (before 37 weeks gestation) in 1991, 7 percent had received late (third-trimester onset) or no prenatal care; 72 percent began care in the first trimester. In contrast, only about 3 percent of mothers who carried their babies to term had late or no prenatal care; 82 percent began care in the first trimester.

American Indians. Of those American Indian women in Wisconsin who gave birth in 1991, 61 percent began prenatal care in the first trimester, 16 percent had 13 or more visits, and 50 percent had 10 or more visits. Of Indian women who began care in the first trimester, 70 percent made 10 or more visits, and 24 percent made 13 visits. Nine percent of American Indian women received late (third-trimester onset) or no prenatal care.

Of American Indian women responding to the 1990 Prenatal Care Survey, 34 percent reported one or more barriers to initiating prenatal care. Locating a sitter for other children was the major barrier cited by American Indian respondents (17 percent), followed by not knowing "early on" that they were pregnant (15 percent), not having transportation (11 percent), not being sure they'd have the baby (7 percent), not having enough money (6 percent), and difficulty getting an appointment (6 percent).

Forty-two percent of American Indian women reported that their pregnancy was planned.

Births to American Indians, Wisconsin 1991

	American Indian	State
Percent of Live Births	1.2%	100%
Infant Mortality Rate*	15.2	8.6
Low Birthweight:		
<2,500 gms	4.9%	6.2%
<1,500 gms	0.8%	1.1%
Prenatal Care:		
1st Trimester/≥ 10 Visits**	70%	87%
Late or None***	9%	4%
Delivery at Term	92%	91%

* Infant deaths/1,000 live births, 1987-1991.

** Of women with first-trimester care, the percentage who made 10 or more visits.

*** Third-trimester onset or no care.

Source: Wisconsin Birth Certificate File, 1991; matched files of infant births and deaths, 1987-1991.

Compared with other groups, Indian women were least likely to report they recognized their pregnancy in the first month (17 percent) and more likely to report first recognizing the pregnancy in the fourth month or later (13 percent).

Of American Indian women who experienced a pre-term birth (before 37 weeks gestation) in 1991, 9 percent had late or no prenatal care; 62 percent began care in the first trimester. Of Indian women who had full-term births, 10 percent had late or no prenatal care; 61 percent began prenatal care in the first trimester.

Southeast Asians. In general, Southeast Asian women are the lowest utilizers of prenatal care in Wisconsin; this largely reflects the health care patterns of the Hmong population.[a] (In 1991, 96 percent of the 1,230 births to Southeast Asians were Hmong.) Only 39 percent of Southeast Asian women giving birth in 1991 received first-trimester prenatal care, 33 percent made 10 or more visits and 7 percent made the recommended 13 visits. Southeast Asian mothers had a higher proportion of prenatal care visits initiated in the second trimester (48 percent) and third trimester (12 percent) than any other group examined. Of Southeast Asian women who initiated care in the first trimester, 60 percent made 10 or more visits and 14 percent made 13 or more visits.

According to results of the 1990 Prenatal Care Survey, 75 percent of Southeast Asian women who gave birth in 1990 reported one or more barriers to obtaining prenatal care. The leading barrier to initiating prenatal care reported by Southeast Asian respondents was not knowing they were pregnant (32 percent). The next most frequent barriers reported were not knowing where to go for prenatal care (25 percent), not having enough money (22 percent), lack of transportation (21 percent), and difficulty in obtaining childcare (20 percent). Other difficulties cited by Southeast Asian women were difficulty getting an appointment (12 percent), getting an appointment at a convenient time (13 percent), finding a physician who would take Medical Assistance/Healthy Start (14 percent), and not being sure they would have the baby (16 percent). Compared with all women, a higher proportion of Southeast Asian women reported not knowing what prenatal care was (11 percent), and having had a normal birth in the past without prenatal care (13 percent); the statewide (total) rate for those barriers was 1 percent.

Births to Southeast Asians, Wisconsin 1991

	Southeast Asian	Hmong	State
Percent of Live Births	1.7%	1.6%	100%
Infant Mortality Rate*	8.3	N.A.	8.6
Low Birthweight:			
<2,500 gms	6.7%	6.6%	6.2%
<1,500 gms	1.0%	.9%	1.1%
Prenatal Care:			
1st Trimester/ ≥10 visits**	60%	59%	85%
Late or None***	13%	13%	4%
Delivery at Term	87%	87%	91%

* Infant deaths/1,000 live births, 1987-1991.

** Of women with first-trimester care, the percentage who made 10 or more visits.

*** Third-trimester onset or no prenatal care.

Source: Wisconsin Birth Certificate File, 1991; matched files of infant births and deaths, 1987-1991.

Southeast Asian women reported the highest percentage of planned pregnancies (73 percent). They also had the highest percentage of women who did not recognize their pregnancy until the fourth month or later

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[a] Rather than address all Asian births in Wisconsin, this chapter addresses birth characteristics and outcomes only among the Southeast Asian population; other Asians have birth characteristics similar to or better than the general population.

(16 percent). Twenty-seven percent of Southeast Asian women said they knew of their pregnancy in the first month.

Of Southeast Asian women whose babies were born prematurely (before 37 weeks) in 1991, 11 percent had late or no prenatal care, and 35 percent began care in the first trimester. Of Southeast Asian women whose babies were full-term, 13 percent had late or no care and 39 percent had first-trimester care.

African Americans. Fifty-eight percent of black women in Wisconsin who gave birth in 1991 initiated prenatal care in the first trimester and 51 percent had 10 or more prenatal care visits; 16 percent made the recommended 13 or more prenatal visits. The tendency toward fewer prenatal care visits among black women is partly explained by their greater percentage of premature births. Among black women initiating care in the first trimester, 71 percent made 10 or more visits and 25 percent made 13 or more. Eleven percent of black women received late or no prenatal care, compared with 4 percent of all women in the state.

Births to African Americans, Wisconsin 1991

	African Amer.	State
Percent of Live Births	9.9%	100.0%
Infant Mortality Rate*	17.4	8.6
Low Birthweight:		
<2,500 gms	14.2%	6.2%
<1,500 gms	2.9%	1.1%
Prenatal Care:		
1st Trimester/≥10 visits**	71%	85%
Late or None***	11%	4%
Delivery at Term	80%	91%

* Infant deaths per 1,000 live births, 1987-1991.

** Of women with first-trimester care, the percentage who made 10 or more visits.

*** Third-trimester onset or no care.

Source: Wisconsin Birth Certificate File, 1991; matched files of infant births and deaths, 1987-1991.

In the 1990 Prenatal Care Survey, 34 percent of black women respondents reported experiencing one or more barriers to prenatal care, compared with 17 percent of all respondents. The top five obstacles to care cited by black women in the survey were not knowing they were pregnant (24 percent), childcare for other children (12 percent), transportation (11 percent), difficulty getting an appointment (11 percent), and not being sure about having the baby (11 percent). Eighteen percent of black respondents reported their pregnancy was planned, and 34 percent reported knowing about their pregnancy in the first month. Ten percent reported they were not aware of their pregnancy until the fourth month or later.

Of those black infants born prematurely (before 37 weeks gestation) in 1991, only 51 percent of mothers received first-trimester care and 15 percent received late or no care. Of black infants born full-term, 60 percent of their mothers began prenatal care in the first trimester and 10 percent received late or no prenatal care.

Hispanics. Of those Hispanic women who gave birth in 1991, 65 percent received first-trimester prenatal care, 62 percent had 10 or more prenatal care visits, and 20 percent had the recommended 13 visits. Of Hispanic women who began prenatal care in the first trimester, 81 percent made 10 or more prenatal visits. Nine percent of Hispanic women received late or no prenatal care; this was about twice the percentage in the statewide population (4 percent).

In the 1990 Prenatal Care Survey, 37 percent of Hispanic women reported experiencing one or more barriers to obtaining early prenatal care. Most commonly cited was not knowing they were pregnant (18 percent). The next most frequently reported barrier was not being sure they would have the baby (10 percent), followed by not wanting a parent to know of the pregnancy (8 percent). Several other barriers were each cited by 7 percent of Hispanic women: not having enough money, having to try more than one office to get an appointment, difficulty in getting an appointment, difficulty in finding a doctor to take MA/Healthy Start patients, and locating a babysitter for other children.

Only 4 percent of Hispanic women who responded to the 1990 survey reported not knowing they were pregnant until the fourth month or later; this is the same percentage as for all respondents. Thirty-two percent of Hispanic women reported knowing about their pregnancy in the first month; and 49 percent reported that their pregnancy was planned (compared with 60 percent of all women responding).

Of those Hispanic infants delivered prematurely (before 37 weeks gestation) in 1991, 62 percent of their mothers began prenatal care in the first trimester and 10 percent received late or no prenatal care. Only slightly more who delivered at term began care in the first trimester (65 percent); 9 percent of full-term births to Hispanics involved late or no prenatal care.

Births to Hispanics, Wisconsin 1991

	Hispanic	State
Percent of Live Births	2.7%	100%
Infant Mortality Rate*	8.1	8.6
Low Birthweight:		
<2,500 gms	6.7%	6.2%
<1,500 gms	1.0%	1.1%
Prenatal Care:		
1st Trimester/≥10 Visits**	81%	85%
Late or None***	9%	4%
Delivery at Term	89%	91%

* Rates are deaths/1,000 live births.
** Of women with first-trimester care, the percentage who made 10 or more visits.
*** Third-trimester onset or no prenatal care.

Source: Wisconsin Birth Certificate File, 1991; matched files of infant births and deaths, 1987-

Programs

Prenatal Care Coordination represents a new effort in Wisconsin to prevent low birthweight and decrease infant mortality among infants born to high-risk pregnant women. After studying the results of successful pilot programs, Wisconsin Medical Assistance (MA) began offering this service to all MA-eligible women in January 1993. Care coordination services are administered through MA-certified prenatal care coordinators, and include outreach efforts; comprehensive and ongoing risk assessment; efforts to ensure that medical and WIC appointments are kept, including arranging transportation; nutritional education and health promotion; assistance with referrals as needed; and encouragement and support for behavioral changes in smoking and alcohol use. An evaluation of the eleven statewide pilot projects found that clients enrolled in prenatal care coordination programs entered prenatal care earlier than comparable women not enrolled.

The *New Concept Prenatal Care Case Management Project* was designed to ensure proper health care for low-income pregnant minority teens in order to reduce infant mortality, low birthweight and premature births. The program serves 80-90 participants per year from a targeted population of five zip code areas of Milwaukee. The prenatal case manager receives referrals from Sinai Samaritan, the City Health Department, School-Age Parent Advocates, and other agencies. A unique aspect of this project is the participation of mentors. The mentors are women involved in their community who are recruited, hired, and trained by the prenatal case manager. They receive training in adolescent pregnancy, including psychological issues as well as the physical changes that occur, warning signs in pregnancy, and community resources. The mentors spend a specific amount of time per month with each teen. Each mentor is assigned two or three teens at a time. Services provided to pregnant teens through this project include transportation to prenatal care and referrals to community resources, such as shelters, social services, and WIC.

The *Milwaukee Healthy Women and Infants Project (MHWIP)* was developed in 1991 by a group of concerned citizens to address infant mortality in the Milwaukee area. The project has been funded by the

National March of Dimes and housed in the offices of the City of Milwaukee Health Department. In May 1993, the Helen Bader Trust of Milwaukee awarded the MHWIP a grant of $50,000 to supplement the funds from the March of Dimes.

The project was designed to target two specific geographical areas in Milwaukee, one that is predominantly African-American in the inner city north, and the other that is multi-cultural (including many Latinos and Southeast Asians) in the inner city south. A consortium consisting of 133 service providers, community agencies, and representatives of city, county and state agencies has been organized and meets on a quarterly basis. Additionally, two area task forces have been established with approximately 33 members each. These task forces are a multi-cultural mix of residents of the two target areas.

The project has exceeded expectations, especially in the area of community involvement. The very residents the project has targeted are identifying issues and developing plans to address those issues. Project staff believe it has been effective in serving persons of color because persons of color have defined how this should be done.

The *South Side Healthy Families Project* administered by the 16th Street Community Health Center serves low-income families on Milwaukee's south side, including Hmong, Laotian, Hispanic, and African-American families. The program includes intensive care coordination that assesses families for their medical and social risks, from family planning through childhood. The staff assure access to high-quality and timely medical and social services, provide health education, and make home visits. The multidisciplinary team includes parent educators.

Because of the positive influence of strong social supports on pregnancy outcome, programs that enhance extended families may be helpful in increasing the perceived value of prenatal care and improving birth outcomes. One such program that also incorporates strong cultural values is called *Mothers, Grandmothers, Aunties, Sisters*, used on the eleven Indian reservations in Wisconsin. This program works to improve maternal-child health by strengthening traditional helping networks of the women in the family, as mentors, teachers, and role models. A recent study has examined the difficulties many Indians face in dealing with a health care system whose beliefs run counter to traditional Indian values.[25] Although individual tribes differ in many ways, most tribes share some traditional native American values, including a cooperative spirit rather than competition, living fully in the moment without an emphasis on future commitments, and a deep respect for tradition and the natural world. Successful health education and health care programs thus may embrace cooperative learning, in less competitive group formats. Programs that involve Indian mentors can also be an important component, both because of the increased self-esteem for the mentor and for the experience of learning from a peer.

The Great Lakes Inter-Tribal Council and the *Model Project for Perinatal Care* program work to assist American Indian women at risk for alcohol and substance abuse, within a context of Native American culture and community. Within each community, the goals of the program include coordinating prenatal care for substance-using women and their families; increasing the availability and accessibility of preventive intervention and treatment services for pregnant and postpartum women; assuring that all infants of the target population are identified, assessed and served; and establishing an advisory board and work group to develop education programs and campaigns in each community.

LOW BIRTHWEIGHT

Low Birthweight

The primary cause of infant death in the United States is low birthweight, defined as a weight at birth of less than 2,500 grams (about 5.5 pounds).[26] [27] Low birthweight infants are at higher risk of infant morbidity and mortality than those born at a weight of 2,500 grams or higher. Very low birthweight includes those infants born weighing less than 1,500 grams (about 3.3 pounds); this group is at the greatest risk of death and disability.

Babies born weighing less than 2,500 grams appear to be at an increased risk for problems such as chronic lung disease, respiratory illnesses, intracranial bleeding, vision and hearing problems, and neurodevelopmental impairments leading to disabilities which often require special education.[28] Although low birthweight infants make up only about 7 percent of live births in the United States, they account for about 60 percent of infant deaths.[29]

In Wisconsin in 1991, the average hospital charge for newborns of normal birthweight was $982, while the average charge for newborns weighing 750-850 grams (1.6-1.9 pounds) was $83,547. In general, the average hospital charge decreased as birthweight increased.

A White House Task Force categorized the primary risks for low birthweight as behavioral factors, biomedical factors, and social/environmental factors (see chart below):[30]

National Findings

During the 1970s the incidence of low birthweight declined steadily across all racial and ethnic groups in the United States, by about 1 percent annually. Since 1980, however, there has been little or no change in the percentage of low birthweight births.[31]

Risk Factors for Low Birthweight

- Behavioral factors
    - Smoking
    - Drug and alcohol use
    - Poor diet and nutrition
- Biomedical factors
    - Multiple closely-spaced pregnancies
    - Maternal age less than 17 years or greater than 35 years
    - Poor maternal health prior to pregnancy
    - Untreated conditions arising during pregnancy
- Social/environmental factors
    - Low socioeconomic status
    - Low levels of education
    - Unplanned/unwanted pregnancy
    - Teenage childbearing
    - Exposure to environmental toxins and hazards

Source: White House Task Force on Infant Mortality, 1989

Infants born to Native American women have lower rates of low birthweight than the general population. This holds true for younger Indian mothers; however, after age 30 the Indian low birthweight rate begins to exceed that of the general population.[32] Low birthweight is thus not a major explanatory factor for the higher infant mortality rate among Native Americans. Indian infants are more likely to be born at high birthweight (4,000 grams or more) than are infants in other racial/ethnic groups; high-birthweight infants may experience perinatal problems such as hypoglycemia, polycythemia, and birth trauma. The causes of higher birthweights among Indian infants are unclear. The high prevalence of diabetes among many Indian tribes may mean a higher rate of diabetes-affected pregnancies, which often result in larger infants. Large-for-gestational age infants must be carefully observed to assure that their weight accurately reflects their maturity.

Nationally, there is a greater amount of data available about birth characteristics of the Hmong population than any other Southeast Asian group. One such study found a higher proportion of low birthweight but lower proportion of very low birthweight among infants born to Hmong women in the U.S., compared to infants of white women.[33]

Black infants in the United States have a low birthweight rate nearly twice that of all races; their rate of very low birthweight is more than twice as high.[34] [35] The reasons for the higher proportion of low birthweight infants born to black women are unclear. Many researchers point to the concentration of risk factors for low birthweight in black communities. Even after taking these factors into account, however, low birthweight rates for blacks remain elevated.[36] [37] A study that compared infants of black and white college-educated parents suggested several possible causes for the continued higher rate of low birthweight among blacks, including physiologic factors; an intergenerational effect of low birthweight mothers giving birth to low birthweight infants; insufficient access to prenatal care; and/or prenatal care services that do not address the needs of black women.[38]

Some physiological factors that may affect pregnancy outcomes appear to occur at higher rates in the black community. Black Americans have a higher prevalence of hypertension, one condition that can lead to pregnancy complications, premature labor, and increased risk of perinatal mortality.[39] Urinary tract and uterine infections, a risk for premature labor, also appear to occur at higher rates among black women; the causes for the higher incidence of these infections among black women are unknown.[40] [41] Most physiological differences may prove to be the "clinical outcomes of a complex social disparity," according to a study of the medical records and birth certificates of 1,300 infants born at 500-1,499 grams.[42] This study found that over 90 percent of the excess risk of very low birthweight among black infants was related to an increased risk among their mothers of premature rupture of the membranes (38 percent), pre-term labor of unknown cause (21 percent), hypertensive disorders (12 percent), hemorrhage (10 percent), or a combination of these maternal conditions. These findings suggest that improvements in the birthweight disparity among black infants are not likely to result from any single clinical intervention but rather from comprehensive prevention strategies.[43]

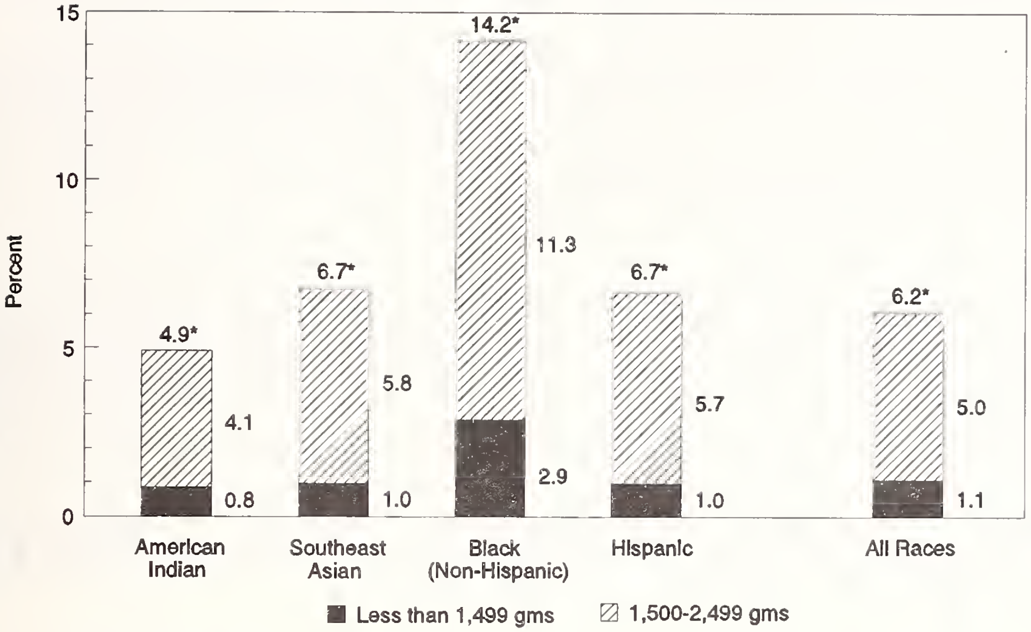
Compared with other Hispanic groups, a greater proportion of infants of Puerto Rican mothers are born at low birthweight. Infants born to Hispanic mothers of other national origins (Mexican and Cuban) have low birthweight rates close to that for the general U.S. population. These relatively favorable rates of low birthweight are surprising because of the risk factors for low birthweight that exist in the Hispanic community. Perhaps related to cultural restrictions on the use of birth control and the cultural importance of motherhood and child-rearing, some Hispanic groups (including Mexican Americans and Puerto Ricans) have relatively high rates of teen-aged pregnancies and high-parity births. Compared with non-Hispanics, Hispanics are more than two-and-a-half times as likely to live below the poverty level; they are also three times as likely as non-Hispanics to receive no prenatal care.[44]

Wisconsin Findings

Overview. In 1991, black infants in Wisconsin were born with low birthweight at more than twice the rate for all births in the state (14.2 percent vs. 6.2 percent), and were almost three times as likely to be born at very low birthweight (2.9 percent vs. 1.1 percent) (Figure 2). Infants born to Hispanic and Southeast Asian mothers had slightly higher rates of low birthweight (6.7 percent in each group) than did all infants, but were close to the state rate for very low birthweight (1.0 percent each). Infants born to American Indian mothers in Wisconsin had a low birthweight proportion below the state average (4.9 percent).

The percentage of infants delivered at term (37 weeks gestation or later) is another indicator of the adequacy of prenatal care services and the health of minority groups. In 1991, 9 percent of all births were pre-term. Not surprisingly, 43 percent of the infants born pre-term weighed less than 2,500 grams, and 12 percent weighed less than 1,500 gms. Only 2 percent of full-term infants were low birthweight.

Figure 2. Low Birthweight in Wisconsin by Race/Ethnicity, 1991



* Total Low Birthweight
Source: 1991 Wisconsin Birth Certificate File.

American Indians. In recent years, the rate of low birthweight among American Indians in Wisconsin has generally been below rates for other races. The low birthweight rate for Wisconsin Indians (4.9 percent in 1991) was also less than the 1986-88 rate for Indians in the Bemidji Indian Health Service area (5.5 percent) and the rate among Indians nationally (5.8 percent) for the same period.[45] Excess low birthweight is thus not a major factor in the comparatively high Wisconsin Indian infant mortality. (Among American Indian infants born in Wisconsin in 1991, 19.0 percent were born at a weight of 4,000 grams or more, defined as high birthweight; the comparable percentage was 12.4 percent among all Wisconsin births in 1991.)

In 1991, 8 percent of births to American Indian mothers were pre-term. Of the American Indians infants born pre-term, 31 percent weighed less than 2,500 grams at birth, and 10 percent weighed less than 1,500 grams. Among Indian women delivering at term, 2.6 percent had low birthweight infants, none weighing less than 1,500 grams.

Southeast Asians. In Wisconsin in 1991, 6.7 percent of infants born to Southeast Asian women weighed less than 2,500 grams at birth, compared with 6.2 percent of all state births. Wisconsin data for 1991 show a similar proportion of very low birthweight (about 1 percent), compared to all births in the state.

In 1991, 13 percent of births to Southeast Asian mothers were pre-term, compared with 9 percent of all births in the state. Low birthweight occurred in 32 percent of pre-term Southeast Asian births, and very low birthweight in 7 percent. Of full-term births to Southeast Asian mothers, 3 percent were low birthweight.

African Americans. In Wisconsin, the 1991 low birthweight rate among black infants was over twice the rate for all races (14.2 percent vs. 6.2 percent), while the very low birthweight rate was nearly three times that of all races (2.9 percent vs. 1.1 percent).

Compared with all infants in Wisconsin, black infants are more likely to be born prematurely; this contributes to their higher rates of low birthweight and infant mortality. In 1991, 20 percent of black infants were born prematurely. Of those pre-term infants, 46 percent were low birthweight (14 percent weighed less than 1,500 grams). Of those black infants born full-term, 6 percent were low birthweight (less than 1 percent weighing less than 1,500 grams).

Hispanics. The rate of low birthweight among the Hispanic community in Wisconsin is only slightly higher than for the state as a whole. In 1991, 6.6 percent of Hispanic infants were born weighing less than 2,500 grams, while 1.0 percent weighed less than 1,500 grams. This compares to 6.2 percent and 1.1 percent for all births in 1991. Hispanic women of Puerto Rican descent had a low birthweight rate of 8.7 percent for 1990-1991 births, while Mexican American women had a rate of 5.9 percent for the same two-year period.

Pre-term delivery occurred in 11 percent of births to Hispanic women in 1991. Of Hispanic women who delivered prematurely, 38 percent had low birthweight infants. Of full-term infants, less than 3 percent were low birthweight.

Programs

Many of the known risk factors for low birthweight often begin long before a pregnancy occurs, are related to overall health behaviors, and are preventable. Because so many risks reflect conditions that predate pregnancy, health education and maintenance programs are necessary as well as overall preventive primary care for women. The incidence of low birthweight can be reduced by early prenatal care that includes medical, nutritional, and supportive services; especially effective will be those programs that identify and target girls and women at special risk for low-birthweight babies.

An evaluation of the prenatal care coordination pilot programs in Wisconsin (described in the preceding Prenatal Care section) found that care coordination services improved birth outcomes in several ways, including:

- It reduced the odds of having a very premature birth (at a gestation of less than 35 weeks, or about 8 months) by 51 percent, from 3.5 percent of births among the general Medical Assistance population to 1.7 percent among the women participating in the pilot programs. Hospital charges for very premature births averaged $20,562 in 1990, 27 times higher than the average of $762 for full-term births (37 weeks or longer gestation); the average difference was $19,800 per infant.
- It reduced the odds of premature birth (at less than 37 weeks gestation) by 36 percent, from 7.9 percent of births among the Medical Assistance population to 5.6 percent among the infants born to women participating in the pilots.
- It improved birth outcomes significantly for groups of women with highest risk: African American women, women who had not graduated from high school, unmarried women, and women with five or more births. For example, prenatal care coordination produced an average 94 gram (3-1/2 ounces) increase in birthweight among African Americans. It also increased gestational age (length of pregnancy) among American Indians.

Taken together, these and other results of the prenatal care coordination projects in Wisconsin suggest that such services are cost-effective. On average, the newborn hospital charge for each woman who received services in the pilot projects was $566 less than the average charge for a Medical Assistance birth in that year; in 1991, it was $873 less. In addition, since project women had much higher medical and social risks than the Medical Assistance control population, the reduction in newborn hospital charges understates the effects of prenatal care coordination.

The Early Identification of Pregnancy (EIDP) projects constitute an on-going effort to improve birth outcomes in Wisconsin. EIDP projects were begun in 1985, with a primary goal of providing comprehensive early pregnancy detection services to high-risk women. The expected outcomes for these projects include early identification of pregnancy, health assessment, counseling, and early referral into the prenatal care system. Women who are at risk for low-birthweight babies or for other medical problems are the targeted population. Agencies providing EIDP services include public health agencies, private non-profit clinics, tribal agencies, and community health centers. In 1991, 45 counties were served by 19 EIDP projects.

In 1991, EIDP projects in Wisconsin provided more than 21,000 pregnancy tests. Health assessments were obtained for clients, with appropriate counseling and referrals to prenatal care providers, AFDC, Medical Assistance, WIC, and other service providers. EIDP outreach activities have been innovative in reaching a hard-to-reach population. The EIDP projects have served over 84,000 women since 1985.

MATERNAL CHARACTERISTICS ASSOCIATED WITH POOR BIRTH OUTCOMES

Maternal Characteristics Associated with Poor Birth Outcomes

In addition to prenatal care and low birthweight, there are other factors that have long been associated with infant morbidity and mortality. Some factors can be directly linked to an increased risk of low birthweight, while others influence the initiation of prenatal care. Several are maternal characteristics, or conditions of the mother that influence the outcome of her pregnancy; others describe obstetrical history. Risk factors discussed in this section include maternal age, marital status, level of education, parity, birth interval, substance abuse, and diabetes.

Elevated rates of risk factors among minorities are often related to their higher poverty rates. A lack of opportunity for furthering education and escaping from poverty influences the levels of education and employment attained by minority women, and the options that appear open to them. The high percentages of births to single mothers among minority groups partly reflect a documented negative association between economic uncertainty and the likelihood of marriage.[46] Cultural norms also play a role: the acceptance of early childbearing varies from culture to culture, as does the desire for large or small families and the role of women.

Nationally, neonatal mortality rates for infants born to women aged 20 and under are 1.5 times as high as rates for infants of women over the age of 20.[47] Poorer birth outcomes among teenage mothers are related to lower birthweight, later initiation of prenatal care, lower socioeconomic level, unplanned and/or unwanted pregnancy, lower educational levels, and other risks found in higher proportions among teenagers.

Marital status is often used as a marker for socioeconomic level; single marital status is generally associated with poor birth outcomes. This is an especially significant risk factor in teen pregnancy. Single-parent households, particularly those headed by women, are more common in black communities; however, this trend began only in the second half of this century. One national study found that from 1890 to 1950 black females in the United States married at a higher rate than white females. Although the proportion of female-headed households has traditionally been higher among blacks, until about 1950 the cause was higher rates of widowhood among black women.[48]

Level of education achieved is another indicator of socioeconomic status. Lower levels of education are associated with poorer birth outcomes, including a direct effect on postneonatal mortality.[49] The magnitude of the association between maternal education level and infant outcomes varies with maternal age and birth order.

Multiple pregnancies (high parity) and short birth intervals place each successive pregnancy at greater risk, particularly for low birthweight and its associated effects. High parity has also been associated with postneonatal mortality.[50] Among the Hmong, marriage at an early age is traditional, and often arranged by the family. Large families were common in Laos, primarily to offset the high infant mortality rate (similar to pioneer days in this country). In addition, many Hmong believe a new infant provides a body for the reincarnation of a deceased ancestor. For all these reasons, Hmong women tend to begin having children earlier, to continue later, and to have many closely-spaced births.

The use of alcohol, tobacco, and illicit drugs during pregnancy can affect the mother and developing child in a variety of ways. Since women who are substance abusers are often using more than one substance, it can be difficult to determine the exact relationship between any individual substance and a pregnancy outcome. One exception is smoking, which has been clearly linked to low birthweight.[51] Current research indicates that perinatal substance abuse in general is associated with increased rates of low birthweight, prematurity, maternal-infant bonding problems, and long-term problems with learning and development.[52]

The effect of any substance abuse on an individual pregnancy is influenced by many factors, such as duration, dose, and timing of substance(s) used; individual characteristics of the user; and environmental factors. There is no safe time to use drugs during a pregnancy and no safe amount of drugs to use; polydrug use may exacerbate the effects of any one drug; and poverty and poor nutrition may also increase the negative effects of substance abuse.[53]

Although specific information on substance abuse by pregnant women is generally unavailable (with the exception of smoking prevalence), the predisposing factors for substance abuse are more prevalent among minority groups; these factors include poverty, isolation, unemployment, and disenfranchisement. Despite the high value placed on childbearing and childrearing, the influence of these factors may be overwhelming for many women in minority communities, particularly those with long-term experiences of hopelessness. A study at Sinai-Samaritan Medical Center in Milwaukee found that prenatal care can improve perinatal outcomes among women who use drugs.[54]

Some medical conditions that can affect pregnancy are found at higher rates among African American women, including diabetes, hypertension, and obesity. All of these conditions require special care during pregnancy. Studies also indicate a higher prevalence of diabetes and obesity among both Hispanic and American Indian women, compared to women in the general population.

In pregnant women, diabetes can cause congenital anomalies, large-for-gestational age infants, respiratory distress syndrome, and other birth complications in their infants. Most diabetes-affected pregnancies involve women who develop gestational diabetes (diabetes that resolves with the end of pregnancy). The remaining diabetes-affected pregnancies are to women who have pre-existing diabetes. Pre-conceptional counseling and early identification of pregnancy in women with pre-existing diabetes, and universal screening of all pregnant women to diagnose gestational diabetes, are important steps in reducing the complications of pregnancy affected by diabetes and producing a healthy infant. Prenatal care for women who have or develop diabetes must begin early, and the pregnancy must be monitored carefully. The mother must receive intensive education regarding the complex regimen of blood glucose monitoring, dietary manipulation, and insulin injections, along with emotional support for maintaining these routines.

National Findings

In 1989, 5 percent of U.S. births were to women younger than 18 years of age. The proportion of births to women less than 18 years old varied by racial and ethnic group: 11 percent of black mothers, 8 percent of Native Americans, and 7 percent of Hispanic mothers. Within Hispanic groups, 9 percent of Puerto Rican women and 7 percent of Mexican American women were less than 18 when giving birth. While 2 percent of births to Asian mothers were to women less than 18 years of age, this proportion varied with national origin; Southeast Asians, particularly the Hmong, have a higher proportion of births to adolescents.[55]

Nationally, 27 percent of women who gave birth in 1988 were unmarried. More black women (66 percent) were unmarried, followed by Native Americans (53 percent), Hispanics (36 percent) and Asians (12 percent). Among the Hispanic groups, 55 percent of Puerto Rican mothers were unmarried, and 32 percent of Mexican Americans.[56]

In 1988, nearly a quarter (23 percent) of births in the United States were to women who had completed less than 12 years of education. Hispanic women were the least likely to have completed high school, with 53 percent reporting less than 12 years of education (61 percent of Mexican American mothers and 44 percent of Puerto Rican mothers). Thirty percent of black women, 37 percent of Native American women and 26 percent of Asian women had less than a high school education at time of delivery. The level of education among Asian women giving birth varies widely across cultures, with Southeast Asian women tending to have less education than women in other Asian groups; this largely reflects education levels among the Hmong.[57]

Wisconsin Findings

Overview. In Wisconsin, 4 percent of births in 1991 were to mothers less than 18 years of age. A higher proportion of black mothers were in this group (14 percent) followed by Hispanics (10 percent), American Indians (8 percent) and Southeast Asians (7 percent) (Table 1).

In 1991, 25 percent of Wisconsin births were to unmarried women. The percentage of nonmarital births varied by race and ethnicity: 83 percent of births to black women, 63 percent of births to American Indian women, 45 percent of births to Hispanic women, and 8 percent of births to Southeast Asian women.

Table 1. Birth Risk Factors by Race/Ethnicity, Wisconsin 1991

Race/ Ethnicity	Maternal age Less than 18	Not Married	Less than High School Graduate	Fourth or Higher Birth	Less than 24 Months Since Last Live Birth
State Total	4%	25%	17%	12%	17%
Black	14	83	47	20	29
American Indian	8	63	43	22	25
Hispanic	10	45	50	17	24
Southeast Asian	7	8	80	63	56

Source: Wisconsin Birth Certificate File, 1991

In Wisconsin in 1991, 17 percent of women giving birth had less than a high school education. Compared with this overall percentage, higher proportions of minority women who gave birth in 1991 had less than a high school education. The highest proportion of births to women who had not completed high school was found among Southeast Asian women (80 percent), followed by Hispanic women (50 percent), black women (47 percent), and American Indian women (43 percent).

Twelve percent of Wisconsin births in 1991 represented the mother's fourth or higher birth. The proportion of births in this category was higher among Wisconsin minorities: 63 percent of Southeast Asian births (65 percent of Hmong births); 20 percent of black births; 22 percent of American Indian births; and 17 percent of Hispanic births.

Similarly, births to minority women in Wisconsin were more closely spaced than births in the state as a whole. Of all Wisconsin women giving birth in 1991, 17 percent had experienced another birth within the previous 24 months. The proportion was 56 percent among Southeast Asian women (58 percent among Hmong women); 29 percent among black women; 25 percent among American Indian women; and 24 percent among Hispanic women.

Birth certificate data indicate that about 23 percent of Wisconsin women who gave birth in 1991 smoked during their pregnancy. American Indian women had the highest reported rate (48 percent), followed by black women (28 percent), and Hispanic women (17 percent). Smoking was reported by less than 1 percent of Southeast Asian women who gave birth (0.4 percent).

According to Wisconsin birth certificate data for the two-year period 1989-1990, 2 percent of all pregnancies in the state were affected by diabetes. (Birth certificate data underestimate the number of pregnancies affected by diabetes.) Four percent of American Indian births and 3 percent of Hispanic births were to women diagnosed with pre-existing or gestational diabetes. Fifteen percent of women with diabetes began prenatal care after the first trimester; often this is too late to prevent many of the birth defects that can be avoided with good blood glucose control. In addition, the highest rates of diabetes-affected births occurred among two of the groups that tend to receive late prenatal care, American Indians and Hispanics.

American Indians. Eight percent of American Indian women who gave birth in 1991 were less than 18 years old; 63 percent were unmarried. Twenty-two percent of births to American Indians in 1991 represented the mother's fourth birth or higher. Births to Indian women tend to be closely spaced: 25 percent of American Indians who gave birth in 1991 had given birth less than 24 months previously. Finally, 43 percent of Indian women who gave birth in 1991 had less than a high school education.

Birth certificate information for 1991 indicated that 48 percent of Indian births were to women who smoked during pregnancy; this was more than double the state percentage.

In 1989-90, Wisconsin Indian women had the highest reported rate of diabetes-affected births (4 percent). Since 1991 data indicate that only 61 percent of Indian women initiated prenatal care in the first trimester, the danger of diabetes complications and their long-term effects among affected infants is significant.

Southeast Asians. Compared with all women in Wisconsin who gave birth in 1991, Southeast Asian women had higher rates of some commonly identified risk factors for poor birth outcomes: young and old maternal age, high parity and short birth interval, and low educational level. However, Southeast Asian mothers are less likely to be unmarried than women in the state as a whole or in any other racial/ethnic group in Wisconsin. The higher parity and short birth intervals are particularly striking in this group; these higher proportions primarily reflect the parity and birth interval patterns among the Hmong.

In 1991 in Wisconsin, 7 percent of Hmong women who gave birth were aged 17 or less, and 6 percent were age 40 or older. This was nearly twice the state percentage of adolescent mothers and five times the state percentage of mothers 40 and older. Of those Hmong women giving birth in 1991, 58 percent had a previous delivery within 24 months, in contrast to 17 percent of all state women giving birth. Sixty-five percent of Hmong births in 1991 were the mother's fourth birth or higher. Only 17 percent of Hmong women giving birth in 1991 had a high school diploma or education beyond high school. One factor favoring healthy birth outcomes is that less than 1 percent of Southeast Asian women who gave birth in 1991 smoked during the pregnancy.

African Americans. In Wisconsin in 1991, 14 percent of births to black women were to teenagers less than 18 years old; 47 percent of blacks giving birth had not completed high school at the time of delivery. During that year, 20 percent of births to black women represented the mother's fourth or higher birth; 29 percent of births occurred to mothers who had given birth less than 24 months previously. Eighty-three percent of black women who gave birth in 1991 were unmarried.

Birth certificate information for 1991 indicated that 28 percent of black births occurred to women who smoked during the pregnancy; this is somewhat higher than the proportion among all births in the state (23 percent).

Hispanics. Hispanics, especially those of Mexican American descent, tend to have high rates of teen pregnancies and high parity.[58] This pattern is also noted among Hispanic births in Wisconsin. In 1991, 10 percent of Hispanic women who gave birth were less than 18 years of age, 50 percent had less than a high school education, and 45 percent were unmarried. Of Hispanic births in 1991, 35 percent represented the mother's fourth or higher birth.

Based on 1991 birth certificate data, the proportion of women who smoked during pregnancy was lower among Hispanic women than among all Wisconsin women giving birth (17 vs. 23 percent). In 1991, birth certificates indicated that 3 percent of births to Hispanic women in Wisconsin involved a diabetes-affected pregnancy.

INFANT MORTALITY

Infant Mortality

Infant mortality is defined as the death of a child during the first year of life. The infant mortality rate (infant deaths per 1,000 live births) for a community or population is commonly accepted as a measure of the general health and well-being of that group because of its relationship to maternal living conditions, nutrition, health status and access to medical care.[59] [60]

The two components of the infant mortality rate (neonatal and postneonatal) provide more specific indicators of maternal/child well-being. The neonatal mortality rate (death in the first four weeks of life) is used as an indicator of the health of the mother before pregnancy, the accessibility of prenatal care services, and the provision of neonatal intensive care technology. In general, neonatal mortality accounts for about three-fifths of infant deaths.

The postneonatal mortality rate (death occurring from age four weeks to one year) is more likely to reflect environmental conditions, quality of care for children, and the accessibility and utilization of health care services, particularly preventive services for children.

Poverty and its effects increase the risk of infant mortality in a variety of ways (see box at right).[61]

How Poverty Affects Infant Mortality

Increased incidence of maternal medical problems:
- Anemia
- Premature rupture of membranes
- Diabetes
- Hypertension
- Infections

Poor maternal nutrition:
- Results in poor maternal health, increasing the likelihood of prematurity and low birthweight

Higher exposure to environmental factors:
- Toxins (such as lead)
- Stress
- Violence

Higher prevalence of harmful behaviors:
- Multiple abortions
- Smoking
- Lack of immunizations
- Drug and alcohol abuse
- Underutilization of health services

Source: LaViest, 1991.

National Findings

In terms of infant mortality, the United States does not compare favorably with other industrialized nations: infant mortality rates are lower in the Scandinavian countries, Japan, most of Western Europe, Canada, and Australia.[62] In 1989, the latest year for which information is available for specific racial and ethnic groups, the overall infant mortality rate in the United States was 9.8 deaths per 1,000 live births.[63] The infant mortality rate among minority populations in the United States varies: in 1989, the overall rates for Hispanic (8.5) and Asian (6.2) infants were below the rate of the general population, while American Indian (12.4) and African American (18.5) infants died at higher rates. Postneonatal mortality rates also vary by race and ethnicity; postneonatal deaths constitute a higher proportion of infant deaths among American Indians than in other racial/ethnic groups.

In 1989 the leading causes of infant death in the United States were congenital anomalies, sudden infant death syndrome, disorders related to short gestation and low birthweight, respiratory distress syndrome, and maternal complications of pregnancy.[64] It should be noted that low birthweight is a factor in over half of infant deaths, and thus has been called the leading cause of infant death in the United States. Contributory factors to the occurrence of congenital anomalies include substance abuse (alcohol, tobacco, and drugs) and insufficient prenatal care.

The leading cause of death in the postneonatal period is sudden infant death syndrome (SIDS). In 1989, a National Institutes of Health expert panel defined SIDS as "the sudden death of an infant under one year of age which remains unexplained after a complete postmortem examination, including an investigation of the death scene and review of the case history." Most SIDS deaths occur two to four months after delivery. Infants who are male, born prematurely, and/or small for gestational age are at an increased risk for SIDS death. Maternal risk factors include age less than 20, nonwhite, unmarried, low socioeconomic background and educational level, and smoking or use of narcotics during the pregnancy.[65]

Nationally, the infant mortality rate in American Indians is higher than the rate in the general population, primarily reflecting excess postneonatal deaths. National statistics for 1986-88 show the postneonatal mortality rate among American Indian to be nearly 1.4 times that of the general population.[66]

Infant mortality rates in Asian populations in the United States vary depending on country of origin, with Southeast Asian women having slightly higher rates than other Asian women and those of the general United States population.

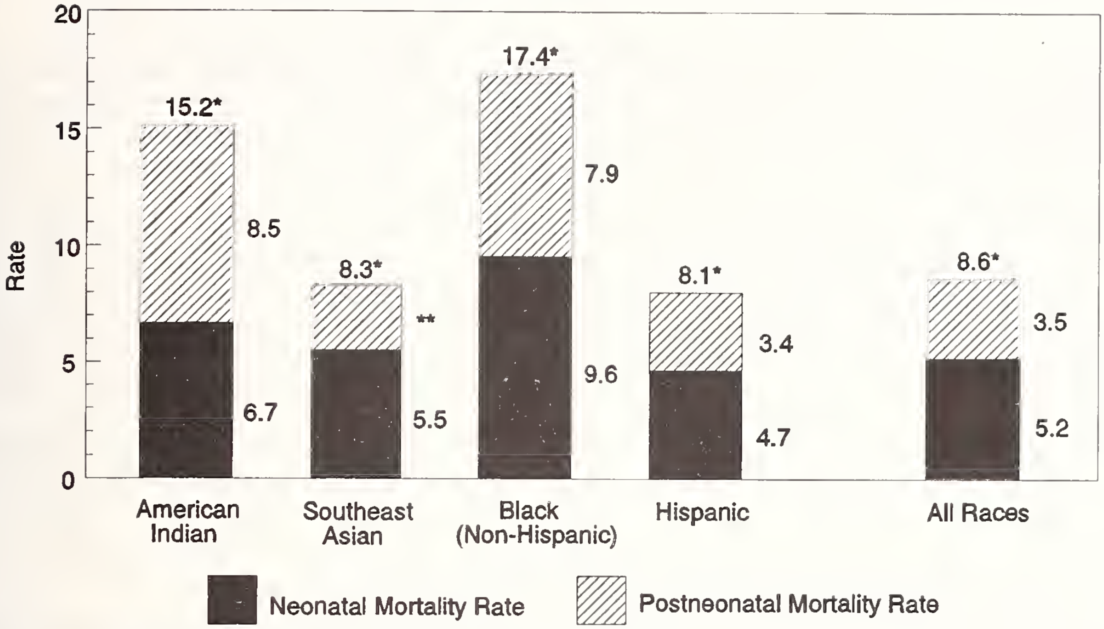
Infants born in the black community of the United States have a higher infant mortality rate than any other minority in the country. Black infants in the United States are twice as likely to die and twice as likely to be of low birthweight as white infants.[67] The increased risk of mortality exists for all maternal age groups[68] and all infant birthweight groups.[69] [70] [71] The higher black infant mortality rate reflects a higher rate of low birthweight, a higher rate of premature births, and an increased risk of postneonatal death regardless of birthweight.[72] [73]

The overall infant mortality rate among Hispanics tends to be close to the rate of the general U.S. population; however, infant mortality rates among Hispanics vary depending on national origin. According to 1989 national statistics, the infant mortality rate for Hispanics (8.5 overall) was highest among Puerto-Rican Americans (9.6), followed by Mexican Americans (7.9) and Cuban Americans (7.4). Infants born to mothers classified as "other and unknown Hispanic" had an infant mortality rate of 9.6 per 1,000 live births.[74]

Wisconsin Findings

Based on the five most recent years of data (1987-1991), infant mortality rates in Wisconsin vary considerably by race/ethnicity (Figure 3). The overall infant mortality rate in Wisconsin for 1987-1991 (8.6 deaths per 1,000 live births) was lower than the national infant mortality rate for 1989 (9.8 per 1,000), which represents the midpoint of the five-year period.[75] As in the United States as a whole, blacks and American Indians in Wisconsin have infant mortality rates higher than those of the general population; in 1987-1991, the mortality rate for black infants in Wisconsin was 17.4 deaths per 1,000 live births; for American Indian infants the rate was 15.2. The infant mortality rate among Southeast Asians (8.3 per 1,000 live births) and the rate among Hispanics (8.1) were slightly below the state rate. These differences exist despite the similar levels of poverty among minority populations in Wisconsin.

Figure 3. Infant Mortality Rates by Race/Ethnicity, Wisconsin 1987-1991



* Infant Mortality Rate (deaths per 1,000 live births)
** Number of post-neonatal deaths too low to calculate a rate.
Source: Wisconsin Matched Birth/Death Certificate File, 1987-1991.

In Wisconsin during 1987-1991, the neonatal mortality rate among black infants (9.6 deaths per 1,000 live births) was markedly higher than the statewide neonatal mortality rate (5.2). American Indian infants (6.7) and Southeast Asian infants (5.5) also had neonatal mortality rates higher than the state rate. The neonatal mortality rate among Hispanic infants (4.7) was lower than the statewide rate.

In 1987-1991, American Indians and blacks in Wisconsin had relatively high rates of postneonatal mortality (8.5 and 7.9 deaths per 1,000 live births, respectively). The postneonatal mortality rate among Hispanic infants (3.4) was similar to the state rate (3.5). There were too few postneonatal deaths among Southeast Asians during this period to report a rate.

According to birth and death certificate information, the leading causes of infant death in Wisconsin (1987-1991) were congenital anomalies (25 percent of infant deaths), sudden infant death syndrome or SIDS (20 percent), and complications of pregnancy (such as premature rupture of membranes and incompetent cervix) (13 percent) (Table 2). Disorders of the placenta, cord and membranes were cited in 8 percent of infant deaths. The category "prematurity and low birthweight, unspecified" accounted for 5 percent of infant deaths; many deaths related to prematurity and/or low birthweight have a more specific cause of death cited and thus do not appear in this category. (Low birthweight is a factor in the majority of infant deaths; in Wisconsin in 1991, 62 percent of infants who died had been born at low birthweights.)

Table 2. Percent Distribution of Selected Leading Causes of Infant Death by Race/Ethnicity of Mother, Wisconsin 1987-1991

	Race/Ethnicity of Mother				
Cause of Death	Black Non-Hispanic	American Indian	Hispanic	Southeast Asian	All Races
Congenital Anomalies	13%	21%	25%	39%	25%
Sudden Infant Death Syndrome	25	30	19	5	20
Complications of Pregnancy	12	2	9	2	13
Disorders of Placenta, Cord & Membrane	8	5	9	11	8
Prematurity and Low Birthweight, Not Otherwise Specified**	9	8	3	9	5
Respiratory Distress Syndrome	4	3	8	9	4
All Other	28	31	27	25	26
Total*	100%	100%	100%	100%	100%
(Infant Deaths)	(583)	(61)	(64)	(44)	(3,090)

Source: Matched files of births and deaths, and birth certificate files, Wisconsin Center for Health Statistics.
* May not total to 100% due to rounding.
** This category (ICD-9 code 765) includes disorders related to short gestation and low birthweight, where no further specification was made.

In a Wisconsin study of postneonatal deaths attributed to SIDS during the period 1978-1987, the rate of SIDS was 6.7 deaths per 1,000 live births for American Indians, 3.6 for blacks and 1.4 for whites. (Other racial/ethnic classifications were not examined.) During the years reviewed for this study, SIDS deaths occurred among American Indians at nearly five times the rate for whites, and among blacks at more than twice the white rate. The risk of postneonatal infant mortality, for which SIDS is the leading cause, is associated with socioeconomic and environmental factors. Poverty, crowded living conditions, and smoking, risk factors found in a greater proportion of minority households, have been associated with a higher risk of SIDS.[76]

American Indians. In Wisconsin for the years 1987 to 1991, the mortality rate among infants born to American Indian mothers was 15.2 deaths per 1,000 live births. This was higher than the rate reported for the Bemidji Indian Health Service Area (which includes tribes in Wisconsin, Minnesota, and Michigan) and for the United States Indian population as a whole. For the years 1986 to 1988, the national infant mortality rate among American Indians was 10.1 deaths per 1,000 live births, and for the Bemidji-area tribes, 11.1.[77] Why Indian infant mortality in Wisconsin is higher than for the three-state region and the nation is unclear, but is being studied by the Wisconsin American Indian Work Group on Infant Mortality, which includes representatives from the Great Lakes Inter-Tribal Council, tribal health clinics, the Indian Health Service, the Wisconsin SIDS Center, and the Wisconsin Department of Health and Social Services.

Based on 1987-1991 information, Indians in Wisconsin had high infant mortality and neonatal mortality rates, and a particularly high postneonatal mortality rate (8.5). Among Indians nationally and in Wisconsin, postneonatal mortality constitutes the majority of infant deaths (whereas for other groups, postneonatal deaths represent only a third of infant deaths). The high postneonatal mortality rates may reflect the high rates of SIDS deaths among U.S. and Wisconsin Indians. SIDS was listed as the cause of 30 percent of Indian infant deaths during 1987-1991. The next most frequently cited cause-of-death diagnoses among Indian infants in Wisconsin were congenital anomalies (21 percent), unspecified prematurity/low birthweight (8 percent), unintentional injuries (7 percent), and disorders of the placenta, cord and membranes (5 percent).

Southeast Asians. Based on 1987-1991 data, the infant mortality rate among infants born to Southeast Asian mothers in Wisconsin (8.3 deaths per 1,000 live births) was about the same as the state rate (8.6). The neonatal mortality rate for Southeast Asian infants (5.5) was also similar to the state rate (5.2); there were too few postneonatal deaths during this period to report a rate.

The comparatively low infant mortality rate among the Southeast Asian population in Wisconsin is impressive since this population has some of the lowest reported levels of prenatal care utilization. Southeast Asians also have higher percentages of younger and older mothers, mothers with less than a high school education, close birth intervals and high parity. In general, all of these factors are risks for poor birth outcomes. Notably, birth certificate data suggest that Southeast Asian mothers have the lowest rate of smoking in Wisconsin (less than 1 percent).

In 1987-1991, the most frequently cited cause of death for Southeast Asian infants in Wisconsin was congenital anomalies (39 percent), followed by perinatal infections (11 percent), unspecified prematurity/low birthweight (9 percent), respiratory distress syndrome (9 percent), and SIDS (5 percent).

African Americans. In Wisconsin in 1987-1991, the neonatal mortality rate among black infants (9.6 deaths per 1,000 live births) and the postneonatal mortality rate (7.9) resulted in an infant mortality rate of 17.4 deaths per 1,000 live births.[a] For black infants who died during 1987-1991, SIDS was the leading cause of death cited on death certificates (25 percent), followed by congenital anomalies (13 percent), complications of pregnancy (12 percent), unspecified prematurity/low birthweight (9 percent), and disorders of the placenta, cord and membranes (8 percent).

Low birthweight characterized 64 percent of black infants who died in 1991. Very low birthweight (less than 1,500 grams or 3.3 pounds) among black infants is a particularly acute concern: in 1991, 2.9 percent of all black infants weighed less than 1,500 grams at birth. This was nearly triple the rate in the total population.

Maternal mortality, while quite rare, occurs at a higher rate among black women. In a study of Wisconsin maternal deaths from 1971-1987, it was found that while 7 percent of the births were to black women, 15 percent of the maternal deaths occurred among blacks.[78]

Hispanics. The infant mortality rate among Hispanics in Wisconsin in 1987-1991 was 8.1 deaths per 1,000 live births. Hispanic postneonatal and neonatal mortality rates were both below the total state rates. The leading causes of death among Hispanic infants were congenital anomalies (25 percent), SIDS (19 percent), complications of pregnancy (9 percent), disorders of the placenta and cord (9 percent), and respiratory distress syndrome (8 percent).

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[a] More recent data show a decrease in the black infant mortality rate in Wisconsin: the rate was 18.9 in 1989, 19.6 in 1990, 14.0 in 1991, and 14.0 in 1992.

Programs

Programs that increase prenatal care and other support received during pregnancy, especially for women at higher risk, will also work to reduce infant mortality. (See the discussion of programs at the end of the preceding sections on prenatal care and low birthweight.)

Efforts to assure a healthy infancy must not end at birth. A number of Wisconsin programs provide on-going care for infants and their families. Several examples include:

The South Side Healthy Family Project. In this project, the Sixteenth Street Community Health Center in Milwaukee provides pediatric care and follow-up services to residents of the near south side of the city. Families served are generally low-income, uninsured and underinsured, and ethnically diverse (Hispanic, Hmong, Laotian, and African American). With its perinatal counterpart, the pediatric case management program is an intensive care coordination program that assesses families for medical and social risks and follows them from conception through early childhood. The staff provides high-quality and timely medical and social services, health education, and home visits. Particularly high-risk or very involved cases are discussed at multi-disciplinary case conferences twice monthly; these conferences include physicians, nurses, case managers, social workers, parent educators, health educators, and outreach personnel. Perinatal case management services were begun in 1987; the pediatric component was added in January 1992.

HealthCheck. HealthCheck is a federally-mandated comprehensive preventive health examination program for Medical Assistance recipients under 21 years old. The purpose of HealthCheck is to identify health problems early and assure that timely follow-up treatment is received. Outreach and case management are critical components of the HealthCheck program.

Rural Infant Health Project. Given high rates of infant mortality among Native Americans in Wisconsin, it is critical that infants receive appropriate health care. The Wisconsin Department of Health and Social Services has funded a three-year project, currently involving eight tribes, to promote a healthy start for Native American children during the first year of life. The project focuses on coordinating comprehensive health services for infants through home visits by nurses or outreach workers, tribal well-child clinics, and parenting classes. Continuing education workshops for tribal nurses are also provided to improve knowledge and skills in the area of maternal/child health.

POWER Project. POWER (Positive Options for Women Entering Recovery), a program of the Milwaukee Women's Center, Inc., is a comprehensive, managed-care model serving substance-abusing mothers, pregnant women, their children, and their extended families. POWER promotes healthy, alcohol- and drug-free women who are better able to care for themselves and their children. POWER's goals are to:

1. Provide medical intervention, assessment, treatment, and education; including prenatal care, postnatal care, pediatric care and family planning. Medical care is coordinated through the woman's Title 19 HMO.

2. Provide home-based case management, social services and/or referral for social services for the development of life skills, technical skills, GED preparation and job counseling.

3. Provide referral to the Milwaukee Women's Center's Birth to Three program for evaluation and treatment of children with developmental delays.

4. Provide gender-specific and culturally competent substance abuse and mental health treatment. Treatment is under the supervision of the Milwaukee Women's Center's state-certified mental health/AODA outpatient clinic, the Resolution Clinic.

POWER, in partnership with the woman, establishes an individualized treatment plan tailored to each woman's needs and circumstances. Day care and transportation are included in the program. POWER serves about 50 women and 250 children annually; 98 percent of the women stay in the program for at least one year. In 1992, 15 percent of the women were ready during the first year to begin work towards their GED; 15 percent of the women during the first year became employed in decent-paying jobs; and 98 percent of the babies born to women in the program were cocaine-negative.

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CHILDREN AND YOUTH
AGES 1–17

Introduction

The years 1-17 encompass great changes. During the first years of life the child learns to walk and run, and increasingly to explore the environment. Physical needs that must be met during these years include good nutrition, protection from injuries, and immunization against communicable diseases. Of equal importance are guidance and stimulation for emotional and intellectual development.

As children reach school age, their exploration of their environment expands into their neighborhoods and schools. Social skills develop rapidly. These are years for instilling good health habits: safety, physical activity, diet, and avoidance of harmful substances. During later childhood, some of the healthiest years of the life span, children can be guided into patterns of living that will help them maintain good health throughout life. In this respect, role models are important to children, because they tend to "do as you do, not as you say."

The adolescent years are a time of physical changes and increasing experimentation as teens seek independence in many respects. The general good health of teenagers convinces them they are immune to such risks as poor nutrition, inadequate rest, and other health risks. Adolescents may try out many of the things their parents have told them to avoid. The quality of family relationships and the strength of peer influences can affect the likelihood of experimentation with abusive substances, such as tobacco, alcohol, and drugs.

In general, health during childhood and adolescence is marked by lower rates of mortality and hospitalization than at any other time in the life span. The good health and resilience characteristic of most children and youth are needed as they grow physically, developmentally, and socially. Despite the comparatively low likelihood of mortality or serious illness, however, children today face many risks to their health, safety, and well-being. Children born into poverty are at particular risk.

The following aspects of health among children and youth are discussed in this chapter: overall mortality; injury; respiratory ailments; lead exposure; vaccine-preventable diseases; sexually transmitted diseases; adolescent pregnancy; drug, alcohol, and tobacco use; and use of preventive medical and dental care. Reflecting the differences in health risks and outcomes between childhood and adolescence, information will be presented when possible in terms of two age subgroups: ages 1-11 and ages 12-17.

All-Cause Mortality

In general, mortality rates among children are low in all racial and ethnic groups. Deaths from infectious disease, which at the turn of the century accounted for the majority of deaths in childhood, have become rare owing to the use of antibiotics and immunizations. Unintentional injury ("accidents") now cause the majority of deaths in this age group; congenital anomalies and cancer each cause a comparatively small percentage of deaths. Intentional injury mortality, comprising deaths from homicide and suicide, is increasing as a percentage of all deaths among children.

National Findings

In 1989, the overall mortality rate for children of all races aged 1 to 14 in the United States was 32 deaths per 100,000 population.[1] Asian children had the lowest death rate (26 per 100,000), followed by Hispanic children (33), American Indian children (47), and African American children (48).[2]

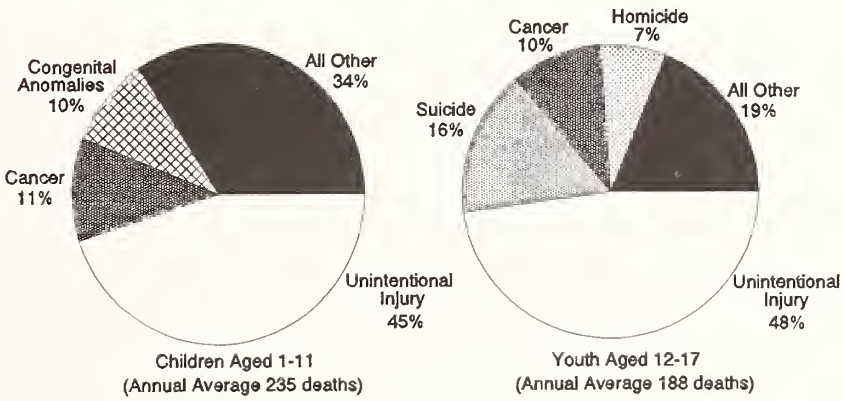
National data were also analyzed for two age subgroups: children aged 1-4 and 5-14. In 1989, children ages 1 to 4 had the following mortality rates by cause: injury, 19 per 100,000; congenital anomalies, 6 per 100,000; and cancer, 3 per 100,000. Children ages 5-14 died from injury at the rate of 12 per 100,000; cancer 3 per 100,000; and homicide 1.5 per 100,000.[3]

Wisconsin Findings

During the five-year period 1987-1991, an average of 235 deaths per year occurred among Wisconsin children aged 1-11. About 45 percent of these deaths were attributed to injury, 11 percent to cancer, and 10 percent to congenital anomalies (Figure 1).

A yearly average of 188 deaths occurred among youth aged 12-17. As among younger children, unintentional injury was the leading cause of death among adolescents, accounting for 48 percent of deaths; 16 percent of deaths were attributed to suicide, 10 percent to cancer, and 7 percent to homicide.

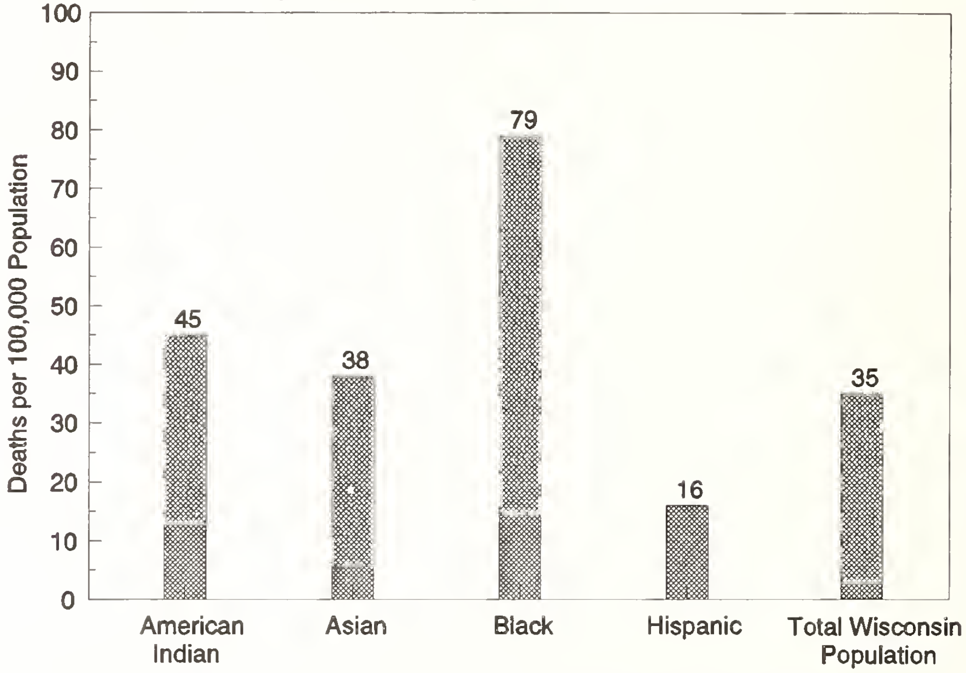
Figure 1. Percent of Deaths by Cause Among Children Aged 1-11 and Youth Aged 12-17, Wisconsin 1987-1991



Source: Wisconsin death certificates (resident data), Center for Health Statistics.

During 1987-1991, the age-specific mortality rate among all Wisconsin children and youth aged 1-17 was 35 deaths per 100,000 population (Figure 2); this rate includes deaths from all causes. The rate of death among 1-17-year-olds varied by race/ethnicity: 45 per 100,000 among American Indians, 38 per 100,000 among Asians, 79 per 100,000 among African Americans, and 16 per 100,000 among Hispanics.

Figure 2. Age-Specific Rates of Death from All Causes Among Children Aged 1-17, By Race/Ethnicity, Wisconsin 1987-1991



Source: Wisconsin death certificates (resident data), Center for Health Statistics.
Note: Racial groups exclude Hispanics.

Within the population aged 1-17, mortality rates differed by age subgroup. The age-specific mortality rate among all children ages 1-11 was 29 deaths per 100,000 population. Among children aged 1-11, the mortality rate was 39 per 100,000 among Asian children, 61 per 100,000 among African American children, and 16 per 100,000 among Hispanic children. Too few deaths occurred among American Indian children ages 1-11 to report a mortality rate.

Youth aged 12-17 have a higher mortality rate than younger children; in 1987-1991 the mortality rate among Wisconsin youth aged 12-17 was 47 deaths per 100,000 population. The mortality rate among African Americans in this age group was 63 per 100,000, about 1.5 times the rate for the age group as a whole. Too few deaths occurred in each of the other racial/ethnic groups to report a rate.

INJURY MORBIDITY AND MORTALITY

INJURY OVERVIEW

UNINTENTIONAL (ACCIDENTAL) INJURY

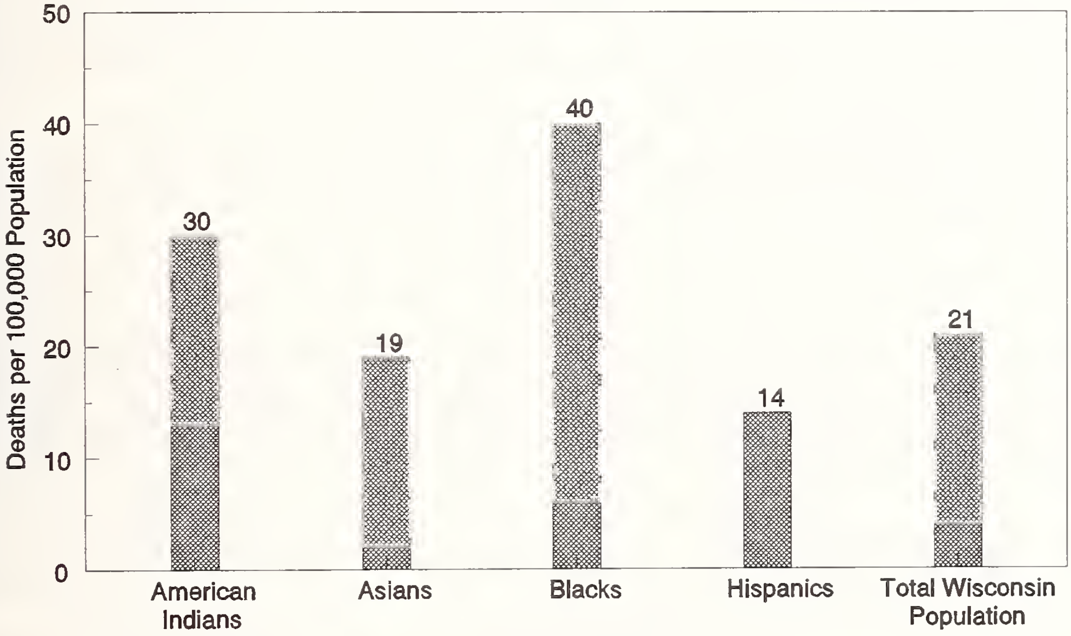
INTENTIONAL INJURY

Injury Overview

Injury is the leading cause of death among U.S. children ages 1-17. Child mortality rates in the United States are higher than in other industrialized nations, with the excess mortality primarily due to deaths caused by injury.[4] About 75 percent of injury deaths among children are those caused by unintentional injury, including deaths from motor vehicle accidents, fires, drownings, and other "accidental" causes.[a] About 25 percent of injury deaths among children are the result of intentional injury (homicide and suicide).[5]

According to death certificate information for children aged 1-17, American Indian children (30 deaths per 100,000) and African American children (40 deaths per 100,000) experienced higher rates of death from injuries overall than did Wisconsin children as a whole (21 per 100,000) (Figure 3). Asian children in the state experienced a death rate (19 per 100,000) more similar to that for all children, and the Hispanic rate was somewhat lower (14 per 100,000).

Figure 3. Age-Specific Rates of Death from All Injuries Among Children Aged 1-17, By Race/Ethnicity, Wisconsin 1987-1991



Note: Includes all deaths attributed to injury (ICD-9 codes 800-999).
Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Hospitalizations for injuries among Wisconsin children aged 1-17 occurred in 1990-1992 at the overall rate of 54 hospitalizations per 10,000 children. Only black children experienced injury hospitalizations at a higher rate (90 per 10,000) than the age group as a whole (Figure 4).

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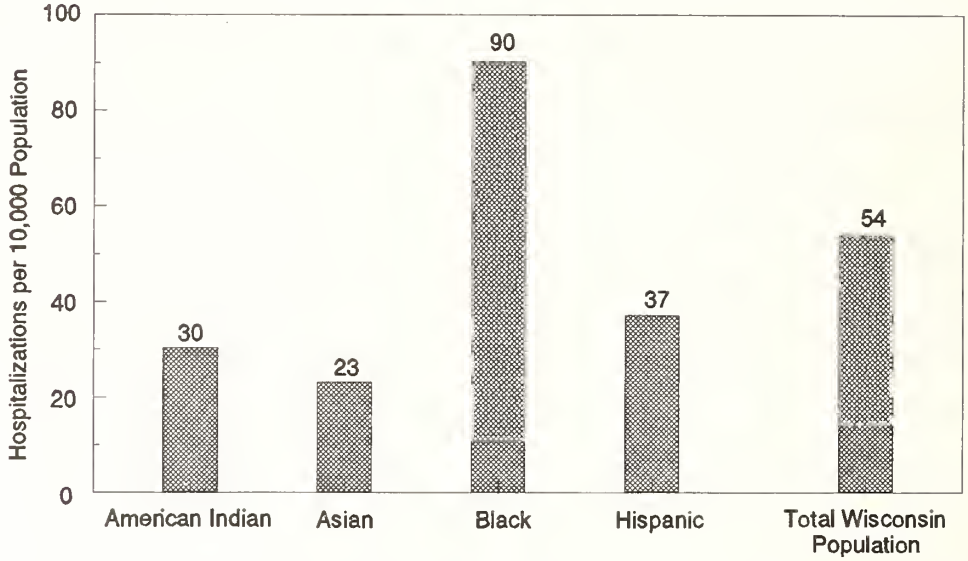
[a] The term "accidental" is no longer used by the public health community, since it implies these events occur randomly and are not subject to preventive measures.

Figure 4. Rates of Hospitalization for Injuries Among Children Aged 1-17
By Race/Ethnicity, Wisconsin 1990-1992



Note: Based on a principal diagnosis at discharge of any injury (ICD-9-CM codes 800-999). Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

Injury hospitalization rates are higher among youth aged 12-17 than among younger children aged 1-11; this is true for children in all racial/ethnic groups (Table 2). In both age categories, males have higher rates of hospitalization for injuries than do females. Based on data for 1990-1992, injury hospitalization rates are higher among African American children than among children in other racial/ethnic groups.

Table 1. **Hospitalizations for Injuries Among Children Aged 1-11 and 12-17, By Race/Ethnicity and Sex, Wisconsin 1990-1992**

	Rates 1-11*			Rates 12-17*		
Racial/Ethnic Group	Males	Females	Total	Males	Females	Total
Total Wisconsin Population	49	33	41	95	65	80
American Indians	37	**	27	**	**	37
Asians	27	17	22	**	**	27
Blacks	94	64	79	149	80	115
Hispanics	35	21	28	68	48	58

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's hospital inpatient discharge data base.

* Rates are the number of hospitalizations per 10,000 population, based on hospitalizations in which any injury (ICD-9-CM codes 800-999) was cited as the principal diagnosis at discharge.

** Fewer than 20 hospitalizations in the analyzed period; no rate is presented.

Unintentional (Accidental) Injury

Unintentional injuries among children often reflect the interaction of several factors: the child's developmental stage, parental awareness of a child's abilities, and a product (such as a toy) or environment (such as a street). For example, while injuries from motor vehicles occur at all ages, the specific cause of motor vehicle injury varies by age. Most infants are injured as occupants of a motor vehicle. Reflecting their increasing mobility, preschoolers are injured not only as vehicle occupants, but also as pedestrians or in activities such as riding tricycles in driveways. Elementary school children are injured as vehicle occupants, as pedestrians, and as bicycle riders. As both drivers and passengers, adolescents and high school students are at increased risk of death from motor vehicle crashes; the risk increases with the involvement of alcohol.[6]

National Findings

Overview. In 1989, unintentional injury was the leading cause of death for children in all racial and ethnic groups. Children aged 1-14 died from unintentional injury at the overall rate of 13.7 deaths per 100,000 population. The rate of death from unintentional injury was lowest among Asian children (9.8 deaths per 100,000 population), followed by Hispanic children (13.0), African American children (18.9), and American Indian children (23.3).[7] Motor vehicle accidents, fire and drowning were the most common causes of unintentional (accidental[a]) injury deaths among children.

Motor Vehicles. Deaths due to motor-vehicle-related injuries are the leading cause of injury deaths in the United States. Nationally in 1988, deaths among motor vehicle occupants and pedestrians caused the greatest proportion of injury deaths among children ages 5 to 19. Death as a result of motor vehicle accidents accounted for about half of unintentional injury deaths among American Indian, Asian and Hispanic children, and about 40 percent of such deaths among African American children.[8]

In 1988, adolescents aged 15-19 accounted for 65 percent of motor vehicle deaths to children; adolescent victims were primarily motor vehicle occupants. Although seat belt use is increasing in general, adolescents use safety belt systems less often than older drivers.[9] Alcohol use is an important factor in motor vehicle deaths among adolescents. In a study conducted during one three-month period in 1990, one-third of adolescents involved in fatal crashes had a blood alcohol concentration of 0.10 percent or above, the legal definition of intoxication in most states.[10] The rate of deaths among motor vehicle occupants is decreasing, probably reflecting the increased use of safety restraints. When properly installed and used, child safety seats can reduce the risk of death and serious injury by 70 percent.[11]

Pedestrian deaths make up 16 percent of all motor-vehicle-related deaths among children ages 0-19, with young children (ages 1-9) at highest risk. Pedestrian injuries among young children often occur in driveways or parking lots. Among older children, pedestrian injuries commonly occur when a child darts out into the street in the middle of the block; children have difficulty judging the distance and speed of oncoming cars. Nationally, pedestrian death rates for black children are higher throughout childhood until ages 15-19, when death rates among white males exceed those among black males.

Drowning. Drowning is the second leading cause of unintentional injury death among U.S. children. Children at greatest risk for drowning are toddlers and preschoolers, who are more likely to drown in pools and standing household water, and adolescent males, who drown most often in open bodies of water. For every drowning death, approximately 2-10 children are hospitalized following a near-drowning; between 5-20 percent of those hospitalized children suffer severe, permanent brain damage.[12]

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[a] The public health community no longer uses this term, since it implies these events are random and not susceptible to preventive measures.

Fires. Fire and burns constitute the third leading cause of unintentional injury death among children ages 0-19 in the United States. Children ages 1-4 are at the highest risk of death from fire; it is the leading cause of death in this age group. While the risk of death from fire decreases with age, the risk of suffering nonfatal fire-related injuries increases with age among children, peaking at ages 15-19.[13]

Many of the risk factors for fire-related deaths are associated with poverty, and thus minority children are disproportionately affected. Poverty-related risk factors for fire deaths include poor housing conditions, lack of smoke detectors, inappropriate or unsafe heating devices, and slower responses by fire departments. Discarded or dropped cigarettes cause fires, as do matches and lighters found by children: cigarettes are the leading cause of residential fire morbidity and mortality.[14]

Wisconsin Findings

Overview. Unintentional injury was the leading cause of death among Wisconsin children of all races and age groups except African American children ages 12-17.

During 1987-1991, unintentional injury was listed as the cause of 45 percent of deaths among Wisconsin children ages 1 to 11. The most frequent causes of unintentional injury deaths among children in this age group were: motor vehicle accidents (19 percent of all deaths, 42 percent of unintentional injury deaths); fire (10 percent of all deaths, 23 percent of unintentional injury deaths); and drowning (7 percent of all deaths; 15 percent of unintentional injury deaths). About half the children who died from motor-vehicle-related injuries in this age group were pedestrians struck by vehicles.

Unintentional injury accounted for 48 percent of deaths among adolescents aged 12-17 in 1987-1991. Motor vehicle accidents accounted for 28 percent of all deaths (76 percent of unintentional injury deaths) and were the leading cause of deaths in this age group.

In Wisconsin in 1987-1991, the statewide age-specific death rate for unintentional injury[a] for ages 1-11 was 13 deaths per 100,000 population; for ages 12-17, it was 22 per 100,000. For children in minority groups, rates of death from unintentional injury could be calculated only for the combined age group 1-17.

In 1987-1991, the age-specific rate of death from unintentional injury for all Wisconsin children aged 1-17 was 16 per 100,000 (Figure 5). Compared with this total rate, the injury mortality rate was higher among black children (22 per 100,000) and Asian children (19 per 100,000). The rate was lower among Hispanic children (11 per 100,000), although this may reflect underreporting of Hispanic ethnicity on death certificates. There were too few deaths from unintentional injury among American Indian children ages 1-17 (an average of 3 per year) to present a rate.

African Americans. Unintentional injury caused about 38 percent of deaths among black children ages 1-17 in Wisconsin in 1987-1991, or about 21 deaths per year; the resulting mortality rate was 22 deaths per 100,000 children aged 1-17. Among children aged 1-11, the mortality rate from unintentional injury was 29 deaths per 100,000; there were too few such deaths among black children ages 12-17 (an average of 3 deaths per year) to present a rate.

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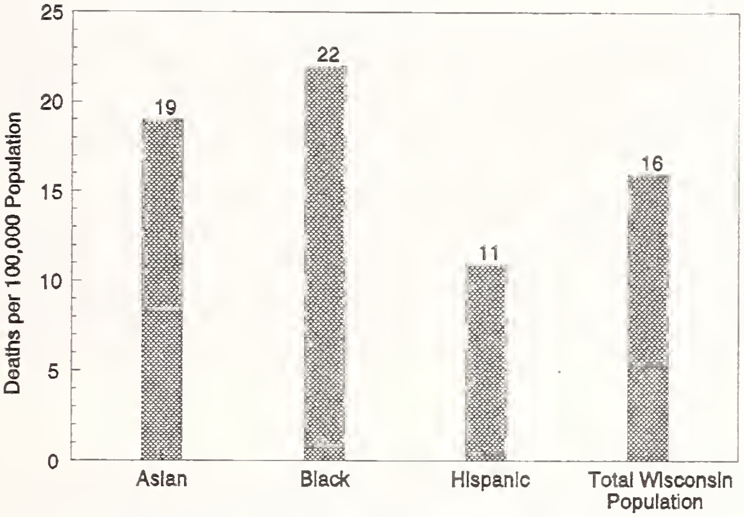
[a] Includes those injury deaths for which intent was undetermined.

Figure 5. Age-Specific Rates of Death from Unintentional Injuries Among Children Aged 1-17, By Race/Ethnicity, Wisconsin 1987-1991



Note: Includes deaths in which intent was undetermined. Too few deaths occurred among American Indian children to present a rate. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Asians. In 1987-1991, about half the deaths among Wisconsin Asian children ages 1-17 were caused by unintentional injury (an average of about 4 deaths per year); this resulted in a mortality rate of 19 per 100,000 children aged 1-17. There were too few injury deaths among Asian children to present age-specific rates for younger and older children (an average of about 3 per year among children ages 1-11, and less than 1 death per year among Asian youth aged 12-17).

Hispanics. During 1987-1991, unintentional injury caused about two-thirds of deaths among Hispanic children ages 1-17 in Wisconsin, or about 4 deaths per year; the resulting mortality rate was 11 per 100,000 children aged 1-17. There were too few injury deaths among Hispanic children to report rates for age subgroups (an average of 3 deaths per year among Hispanic children ages 1-11, and an average of 1 death per year among Hispanics aged 12-17).

American Indians. Unintentional injuries accounted for about one-third of deaths among American Indian children ages 1-17 in 1987-1991, averaging about 3 deaths per year. This is too small a number to present a mortality rate.

Motor Vehicles. During the years 1987-1991, about 44 children aged 1-11 died in Wisconsin each year from injuries resulting from motor vehicle accidents, for a mortality rate of 5.4 deaths per 100,000 population. Older children aged 12-17 died from motor-vehicle-related injuries at a higher rate: a yearly average of 69 deaths among 12-17-year-olds resulted in a mortality rate of 17.1 per 100,000 population.

Black children ages 1-17 died from motor vehicle injuries at a lower rate (4.4 deaths per 100,000) than did the 1-17-year-old population as a whole (9.3 per 100,000). The numbers of deaths among other racial/ethnic minorities were too small to present rates: American Indians, Asians, and Hispanics each experienced an average of 2 deaths per year among children aged 1-17.

Fires. Fire-related injuries (including smoke inhalation and burns) constituted the second leading cause of death for children ages 1-17 in Wisconsin in 1987-1991, accounting for 6 percent of all deaths in the age group. Almost all of these deaths occurred among younger children. An average of 24 deaths per year occurred among children aged 1-11, while youth aged 12-17 averaged 1 death per year.

During the years 1987-1991, the rate of death from fire among children aged 1-11 in Wisconsin was 2.9 deaths per 100,000 population. Nearly half the deaths (about 10 per year) occurred among African American children, who died from fires at the rate of 16.1 deaths per 100,000 population. This was over five times the rate found in the total population of children aged 1-11. American Indian children aged 1-17 and Hispanic children aged 1-17 each averaged 1 death per year from fire; this was too small a number to present a rate. During the five-year period, the yearly average number of fire deaths among Asian children in the state was zero.

Drowning. In 1987-1991, drowning was the third leading cause of death among children aged 1-17 in Wisconsin, accounting for 5 percent of deaths. During this five-year period, an average of 16 children aged 1-11 drowned each year; this resulted in a mortality rate of 2.0 per 100,000 population. An average of 7 drownings per year occurred among youth aged 12-17, for a mortality rate of 1.7 deaths per 100,000. There were too few drowning deaths to determine mortality rates by race (an average of 3 deaths yearly among African American children, and virtually no drowning deaths reported among American Indian, Asian, or Hispanic children).

Programs to Prevent Injury

Injury deaths are not chance occurrences; most are preventable. Prevention strategies can be of several kinds:

- **Technological/environmental strategies** to change the environment in which injuries can occur (smoke detectors, pedestrian bridges, better street lighting)
- **Legislative/regulatory strategies** to require safe behavior (safety restraint use laws, the Poison Prevention Packaging Act of 1970, airbag laws, handgun safety measures)
- **Educational strategies** to persuade people to change their behavior (parenting classes, bicycle helmet campaigns, programs to teach bicycle riding skills).[15]

With funding from the Great Lakes Inter-Tribal Council, the Menominee Clinic in Keshena operates a rural infant health project that focuses on coordinating comprehensive health services for Native American children during the first 3 years of life. Child safety is one of the subjects explicitly addressed in home visits by nurses or outreach workers and well-child clinics, as well as immunizations, well-child care, and parenting information. Transportation to medical appointments is also available.

A 1991 Wisconsin Injury Prevention Grant provided funding to the Eau Claire Fire Department for a project addressing fire safety in the homes of the local Hmong population. The one-year grant funded research and development for an educational package developed especially for Hmong culture, including a teacher's guide and three brochures. In the second phase of the project, funded by the Federal Emergency Management Agency (FEMA), three public service announcements were prepared. In mid-summer 1993, a package of all materials developed (both printed and video) was sent to about 30 communities across the nation that have large Hmong populations. Fire safety educational efforts continue in the Eau Claire Hmong community.

Intentional Injury

The urbanization and mobility that increasingly characterize American life have exacerbated the likelihood of aggressive responses to conflict. Homicide rates, a measure of the level of violence in a community, are 20 times higher in the United States than in most other industrialized nations.[16] A study of international homicide rates noted that the excess homicide mortality in the U.S. was attributable to excess firearms deaths: in 1987, three-fourths of the homicides among U.S. males aged 15-24 involved firearms, compared with less than one-fourth of homicide deaths in this group in 14 other developed countries.[17] During the years 1985-1990, firearm injury was second only to motor vehicle injury as a leading cause of death among children and youth aged 10-19.[18] In 1990, firearms accounted for 1 out of every 8 deaths among children 10-14 years old, and one out of every 4 deaths among teenagers aged 15-19. Deaths from firearms increased from 1985 to 1990: the firearm death rate for children ages 10-14 increased 18 percent, reaching a rate of 3.3 deaths per 100,000 population; for teenagers 15-19 the firearm mortality rate increased 77 percent, to 23.5.

The level of violence is higher in many minority communities. Studies have found that when socioeconomic status is held constant, racial differences in rates of homicide and domestic violence lessen or disappear.[19] [20] Alcohol and drug abuse, unemployment, feelings of helplessness and hopelessness are all related to poverty and occur at higher rates in minority communities.

Intentional injuries among children have been associated with their exposure to higher levels of violence in the environment. The effects of this level of violence in our society are often silent and invisible, but have long-lasting ramifications. Children who are victims of, or witnesses to, repeated acts of violence are at greater risk of perpetrating violence and remaining victims of it; they may not develop the skills to resolve conflict in any way other than with aggression.[21] [22] Women who grow up in this atmosphere are at greater risk of remaining victims of physical and sexual abuse and homicide. Children who grow up in a violent environment are less likely to develop parenting skills that can offset and balance these exposures for their children; and so the cycle continues. The growth of gangs among urban teen populations has had a significant impact on the increase in violence and violent death in many cities: gangs provide a sense of pride, family, and belonging; gang members are primarily males of one race or ethnic group who become opponents of another gang for turf and authority. Resolution of conflicts is most often aggressive and violent.

Suicide rates must also be examined when discussing violence, as suicide can be defined as violence turned inward. On the whole, while more females attempt suicide, more males succeed; this is partly attributable to the lethality of firearms, which males are more likely to use. Suicide among young people is often an impulsive act; when a gun is accessible, the impulse is more likely to result in death.

National Findings

Rates of intentional injury fatalities, both homicide and suicide, are increasing in the United States among children of all races. In 1989, the overall death rate from homicide and suicide among children aged 1-14 was 2.3 deaths per 100,000 population, up from 2.0 in 1987.[23] Nationally, homicide is the fastest rising cause of death among 15-19-year-old males.[24] Even among younger children, homicide has become a more frequent cause of death. Reflecting a variety of factors, including differences in poverty and urbanization, mortality rates from homicide vary by race/ethnicity. In 1989, black children ages 1-14 had a homicide death rate more than two times that of all children in the age group (5.4 vs. 2.3 per 100,000). Native American children had a rate of 3.8, while the rates for Hispanic children (2.3) and Asian children (2.4) were similar to the total rate for children aged 1-14 (2.3).[25]

Wisconsin Findings

Homicide. In 1987-1991, an average of about 8 deaths annually in Wisconsin were attributed to homicide among children aged 1-11, constituting about 3 percent of deaths in this age group. The homicide mortality rate among children 1-11 was 1.0 death per 100,000 children. No deaths attributed to homicide occurred among Asian, American Indian, or Hispanic children aged 1-11; the number that occurred among African American children (an average of 3 per year) was too small to present a rate.

Among 12-17-year-olds, an average of 13 deaths each year in 1987-1991 were attributed to homicide; these deaths constituted about 7 percent of all deaths in the age group. The age-specific death rate from homicide among youth aged 12-17 was 3.2 deaths per 100,000 population. The rate among African American youth aged 12-17 (31.4 per 100,000) was markedly higher than for all youth aged 12-17. During this five-year period, there were virtually no deaths attributed to homicide among Asian, American Indian, or Hispanic youth (1 death in each group during the five-year period).

Suicide. Among children aged 1-11, fewer than 1 death per year during 1987-1991 was attributed to suicide; no mortality rate can be reported.

Among adolescents aged 12-17, an average of 30 deaths per year were attributed to suicide. The age-specific suicide mortality rate for persons aged 12-17 was 7.4 per 100,000. Owing to small numbers of deaths, no rates by minority group can be presented. Suicide was reported as the cause of about 1 death per year among African American youth aged 12-17, 1 death per year among Hispanic youth in the age group, and fewer than 1 death per year among Asian and American Indian youth.

Programs

In 1992, six projects to address intentional injuries among children and youth were funded under a special Wisconsin Maternal and Child Health block grant initiative, the Preventing Injuries from Violence Initiative (PIVI). Each PIVI project agency received a six-month award to design and implement activities to reduce violent behavior or the risk of becoming a victim of violence. The projects targeted children and youth residing in the agency's service area and/or service providers who work with this population.

The PIVI projects used three approaches: (1) training children to resolve conflicts with nonviolent techniques; (2) supporting parents in incorporating nonviolent methods in parenting; and (3) training service providers. Participation was as follows: (1) 326 individuals received counseling services, referrals, etc., and 11 families became active in a home visiting support program; (2) 99 group education sessions reached about 2,250 children and about 120 adults; and (3) six training programs were conducted to prepare 196 service providers with techniques for violence prevention and/or case identification for treatment/referral. All six projects succeeded in initiating new programs in their communities to address identified issues related to injuries from violence.

Each PIVI project designed its own course of action. All had in common that their services were directed to children and families, and that they collaborated with other community agencies (primarily schools, county extension, and other medical or social service providers). One example of a PIVI project was administered by the Boys and Girls Club of Greater Milwaukee, which chose to implement the "Second Step" Violence Prevention Curriculum in two centers serving inner-city youth ages 6-13. Training was held for staff, and special implementation materials were prepared for use in the centers' activity rooms. The materials were then used with 275 children in 16 training sessions. This same curriculum has also been implemented in some Milwaukee public schools and at other social service agencies, affording a consistent approach in the community.

Another PIVI project was administered by the Polk County Public Health Nursing Service, which arranged for an educational package on anger management (including a set of plays and accompanying classroom lessons) to be presented in two school districts. The program consisted of short, interactive plays aimed at child and youth audiences at specified age levels. Two community performances were also held to introduce parents to the program.

RESPIRATORY AILMENTS

ASTHMA

PNEUMONIA/INFLUENZA

TONSILS/ADENOIDS/BRONCHITIS

Respiratory Ailments

Respiratory diseases and related conditions, although rarely fatal in childhood, are a significant source of illness among young children and persist in importance into adolescence. While many of these conditions represent self-limiting conditions such as colds, others (such as asthma) are chronic in nature. Without prompt treatment, persistent and recurring ear infections among young children can result in hearing difficulties during the all-important years when speech and language skills develop.

Evidence is accumulating that children living in households where they are exposed to cigarette smoke are at increased risk of respiratory infections of many kinds. Ear infections and asthma in particular are likely to be more frequent and severe in children who are exposed to tobacco smoke.

Another variable that can affect the severity of chronic respiratory problems is access to health care. Asthma, like diabetes, is a chronic condition that is optimally managed when the health care provider is successful in teaching the patient and family about the disease, its risk factors and "triggers," how to recognize the onset of symptoms, how to self-medicate, and when to seek professional help. Many hospitalizations for asthma could be prevented if timely and effective outpatient health care is available and accessible.

Asthma

National Findings

Nationally, the rate of hospitalizations with asthma as a first-listed diagnosis was 31 per 10,000 in 1990 among all children less than 15 years of age. Data for children by racial or ethnic group were not available. Over all ages, however, black persons had a markedly higher hospitalization rate for asthma (38 per 10,000) than did the national population as a whole (19 per 10,000). Data was not available for other groups.[26]

Wisconsin Findings

In 1990-1992, Wisconsin children aged 1-11 were hospitalized with a principal diagnosis of asthma at the rate of 27 hospitalizations per 10,000 children. Compared with the rate among all children, the asthma hospitalization rate was markedly higher among African American children (110 per 10,000). Hispanic children also experienced a slightly higher rate (31 per 10,000). Asthma hospitalizations occurred at a lower-than-statewide rate among American Indian children (19 per 10,000) and Asian children (12 per 10,000).

Overall, the rate of hospitalization for asthma among 12-17-year-olds (13 per 10,000) was about half the rate among younger children. This was true for children as a whole and for children in minority groups. Still, compared with the rate among all adolescents aged 12-17, the asthma hospitalization rate remained markedly higher among African American adolescents (47 per 10,000) and somewhat higher among Hispanic children in this age group (17 per 10,000). Too few such hospitalizations occurred among American Indian and Asian 12-to-17-year-olds to present rates.

Pneumonia/Influenza

Statewide, children aged 1-11 were hospitalized with pneumonia or influenza at the rate of 27 per 10,000 population. Hospitalizations for pneumonia/influenza occurred at a higher rate among black children (39), Asian children (38), and American Indian children (29), compared with all children in the state. Hispanic children were hospitalized with these diagnoses at the rate of 17 per 10,000 population.

Tonsils/Adenoids/Bronchitis

Children in minority groups were less likely than children as a whole to be hospitalized with a principal diagnosis in this group of conditions. The statewide rate among children aged 1-11 was 29; the comparable rate was lower among black children (17), Asian children (7), American Indian children (18), and Hispanic children (15).

LEAD POISONING

Lead Poisoning

Childhood lead poisoning is recognized as a major public health problem, and one that is preventable. Young children (ages 6 and younger, particularly those ages 3 and younger) are at greatest risk, along with fetuses exposed in utero.

Lead exposure in children encompasses a wide range of possible effects. Very severe lead exposure, causing blood lead levels of 80 micrograms per deciliter of whole blood (ug/dL) or higher, can cause coma, convulsions, and even death. Lower levels cause adverse effects on the central nervous system, kidney, and blood-forming systems. Recent studies have shown that blood lead levels as low as 10 ug/dL, which do not cause distinctive symptoms, are associated with decreased intelligence and impaired neurobehavioral development. Many other effects begin at these low blood lead levels, including decreased stature or growth, decreased hearing acuity, and decreased ability to maintain a steady posture.[27] Maternal and cord blood lead levels of 10-15 ug/dL appear to be associated with reduced gestational age and reduced weight at birth.

Substantial progress has been made in reducing blood lead levels in the entire U.S. population. In the last two decades, the virtual elimination of lead from gasoline has been reflected in reductions in blood lead levels in children and adults. Lead levels in food have also decreased since most manufacturers stopped using leaded solder in cans and since reductions in leaded gasoline have reduced atmospheric deposits of lead on food crops. In 1978, the Consumer Product Safety Commission banned the addition of lead to new residential paint.[28]

Nevertheless, important environmental sources of lead remain. Lead-based paint and lead-contaminated dusts and soils remain the primary sources of lead exposure for children. Children also continue to be exposed through air, water, and food, as well as occupation and hobbies of parents and caretakers.[29]

Sources and Pathways of Lead Exposure in Children

- Lead-based paint.
- Soil and dust.
- Drinking water.
- Parental occupations and hobbies.
- Air.
- Food.
- For some children, other sources, such as "traditional" medicines, may be critical.

Source: Centers for Disease Control, 1991.

Primary prevention efforts (that is, elimination of lead hazards before children are poisoned) must receive more emphasis as the blood lead levels of concern are lowered. The goal of all lead poisoning prevention activities should be to reduce children's blood lead levels below 10 ug/dL. If many children in the community have blood lead levels of 10 ug/dL or higher, community-wide interventions (primary prevention activities) should be considered by appropriate agencies. Interventions for individual children should begin at blood lead levels of 15 ug/dL.[30]

In 1984, an estimated 17 percent of all American preschool children had blood lead levels that exceeded 15 ug/dL.[31] Although all children are at risk for lead toxicity, poor and minority children are disproportionately affected.

Lead-based paint remains the major source of high-dose lead poisoning in the United States. Millions of houses still contain old leaded paint. The Department of Housing and Urban Development estimated that about 3.8 million homes with young children living in them have either non-intact lead-based paint or high levels of lead in dust.[32] Because of the critical role of dust as an exposure pathway, children living in substandard housing and in homes undergoing renovation are at particular risk for lead poisoning.

In general, screening and assessment for lead poisoning should focus on children younger than 72 months (6 years) of age, particularly on children younger than 36 months (3 years) of age. Young children engage in the most hand-to-mouth activity (and therefore are at highest risk for lead exposure) and have the most rapidly developing nervous systems, making them more vulnerable to the effects of lead. Children with developmental delays, who may exhibit pica (eating of nonfood substances) or have more extensive hand-to-mouth activity than other children, would be expected to be at increased risk even if they are 72 months of age and older.

Children who have unexplained seizures, neurological symptoms, abdominal pain, or other symptoms consistent with lead poisoning should also have their blood lead levels measured. In addition, the possibility of lead poisoning should be considered in any child with growth failure, developmental delay, hyperactivity, behavior disorders, hearing loss, anemia, etc.[33]

Priority Groups for Lead Screening

- Children, ages 6 to 72 months, who live in or are frequent visitors to deteriorated housing built before 1960.
- Children, ages 6 to 72 months, who live in housing built before 1960 with recent, ongoing, or planned renovation or remodelling.
- Children, ages 6 to 72 months, who are siblings, housemates, or playmates of children with known lead poisoning.
- Children, ages 6 to 72 months, whose parents or other household members participate in a lead-related occupation or hobby.
- Children, ages 6 to 72 months, who live near active lead smelters, battery recycling plants, or other industries likely to result in atmospheric lead release.

Source: Centers for Disease Control, 1991.

Wisconsin Findings

Lead poisoning is the prominent environmental threat to Wisconsin's children. There are approximately 440,000 children under age 7 in Wisconsin, a relatively constant population from year to year. The Agency for Toxic Substances and Disease Registry has estimated that 17 percent of the nation's children are likely to have blood lead levels of 15 ug/dL or higher. This translates into an estimated 75,000 children at risk for lead poisoning in Wisconsin.

From April 1992 through March 1993, 46,689 or 10.6 percent of Wisconsin's children under 7 years old were screened, and 3,457 of these children were found to have blood lead levels of 20 ug/dL or higher. During the 1992-1993 period, 1,567 homes were inspected and 764 lead abatements were performed. These results reflect the activities of Wisconsin's Childhood Lead Poisoning Prevention Program (see below).

Programs

The Wisconsin Childhood Lead Poisoning Prevention Program received grant funding from the Centers for Disease Control and Prevention (CDC) for lead screening, case management, data management, environmental inspections, and educational materials. Another funding source is a grant from the U.S. Environmental Protection Agency for translating lead brochures into Hmong and Spanish, purchasing HEPA vacuums for lead paint cleanup, and training of local health and housing officials. In December 1992, Wisconsin was awarded a $6 million grant from the Department of Housing and Urban Development for lead abatement in low- and moderate-income housing.

Wisconsin's lead program provides technical support and consultation to the state's 100+ local public health agencies. State personnel assist agencies with the development and expansion of screening programs, emphasizing the importance of targeting high-risk children. State nursing staff focus on educating local health personnel on case management and medical referral protocols for lead-poisoned children. State technical staff provide training to local agency staff on proper methodology for conducting environmental assessments, increasing local capability to complete these inspections promptly and educate the public on lead hazard reduction options. State staff also develop and distribute educational information to families, contractors, physicians, health agencies, and other organizations.

COMMUNICABLE DISEASES

VACCINE-PREVENTABLE DISEASES

SEXUALLY TRANSMITTED DISEASES

Vaccine-Preventable Diseases

Vaccines can prevent nine communicable diseases that can have serious consequences for children: measles, mumps, rubella, polio, tetanus, diphtheria, pertussis, hepatitis B, and haemophilus influenzae type b infection. Although the morbidity and mortality from vaccine-preventable diseases (VPDs) are now low in comparison to the pre-vaccine era, VPDs remain a continued threat in the United States since their causal agents have yet to be eliminated. Many people remain susceptible to these diseases and their complications, particularly preschool children. If epidemics are to be avoided, age-appropriate immunity levels must be achieved and maintained in all communities. Age-appropriate vaccination against these diseases should be maintained on schedule beginning at birth for hepatitis B and at 2 months for the DTP (diphtheria-tetanus-pertussis) and oral polio series.

National Findings

In the United States, the proportion of children entering kindergarten who have completed immunizations has been 95 percent or greater since the 1981-1982 school year.[34] The result has been a decrease since peak reported disease occurrence of 99.9 percent for diphtheria and polio; more than 98 percent for measles, pertussis, and rubella; 92 percent for mumps; and 91 percent for tetanus. These figures include data from the 1989-1991 measles epidemic.

The measles epidemic in the late 1980s brought renewed attention to the serious under-vaccination of children in this country, particularly among preschool children and children living in poverty. The first dose of measles vaccine in combination with rubella and mumps vaccines (MMR) is recommended at age 15 months (12 months in some circumstances), with a second dose of MMR recommended upon entering school. During the measles outbreak, it was found that only 15 percent of the 16-59-month-old children who contracted measles were vaccinated.[35] An average of 35 percent of measles cases reported nationally from 1985-1989 occurred in preschool children. However, much higher proportions of measles-related complications, including ear infections (80 percent), diarrhea (62 percent), pneumonia (64 percent), hospitalizations (55 percent), and deaths (61 percent) occurred in preschool children.[36]

In response to the measles outbreak, there have been efforts to improve overall vaccination coverage of preschool children. According to information received by the CDC from public clinics, administered doses of not only measles-containing vaccines (MMR and other), but also DTP and OPV (oral polio vaccine) have increased substantially. The estimated proportion of all children ages 12-23 months who received measles-containing vaccines through public clinics increased from 25 percent in 1988 to 33 percent in 1991. The proportion of children less than 12 months of age receiving DTP and OPV also increased.[37]

The reasons why children do not receive vaccinations are varied. Parents may not know the importance of preventing these childhood illnesses. Clinic locations, hours, and staff may be insufficient; many settings require an appointment, a physical exam, physician referral, and financial screening or vaccination fees. In other cases, providers do not take advantage of contacts with children to assess immunization status and provide missing vaccinations whenever possible.

Other opportunities to evaluate and provide immunizations should be considered. A study in four cities (including Milwaukee) that included interviews with parents of children who had contracted measles during the outbreak found that many of the families were routinely in touch with public assistance programs, including WIC, AFDC, Medicaid, food stamps, and public housing. Utilizing one or more of these settings to provide immunizations might be an effective way to reach many children. In Milwaukee, 91 percent of families in which measles cases occurred were receiving some form of public assistance, 54 percent were enrolled in WIC, 86 percent were receiving AFDC, and 26 percent were living in public housing.[38]

Wisconsin Findings

In Wisconsin during the 1991-92 school year, 93 percent of children entering kindergarten were fully immunized. Based on retrospective surveys done at school entry, the immunization level among 2-year-old children was 53 percent.

During 1992, the following numbers of cases of vaccine-preventable diseases were reported in Wisconsin: 4 cases of measles, 21 cases of mumps and 526 cases of pertussis. The number of reported pertussis cases represents an increase of 79 percent from 1991, when 113 cases were reported.

Programs

The Immunization Program in the Wisconsin Division of Health supplies vaccines without charge to all local public health agencies, migrant and community health clinics, and tribal health clinics in Wisconsin. These vaccines, which include DTP, MMR, OPV, HIB and HB, are funded through both federal and state sources. During 1992, over 500,000 doses of vaccines valued at $1,640,272 were distributed. The vaccines are offered through local public health agencies to all Wisconsin residents at no charge for the cost of the vaccine.

Local public health agencies thus are an important source of immunizations for children throughout Wisconsin. For example, since 1971 Burnett County Health Services has provided immunizations free of charge to all county residents, using vaccines from the state program. Targeted ages include preschool and school-aged children. An estimated 50 children per month receive immunizations from Burnett County Health Services.

The Wisconsin Winnebago Health Authority (WWHA) Community Health Nursing Program provides immunizations to Native American children and adults at field offices in Wisconsin Rapids, Lake Delton, LaCrosse, Tomah, Black River Falls, and Wittenberg. An estimated 400 people per year receive immunizations through these efforts.

The Menominee Tribal Clinic in Keshena provides a walk-in immunization clinic for children and adults, targeting primarily Native Americans. In-home immunizations are provided to children who are past due. An estimated 90 percent of Menominee children aged 3 months to 27 months are immunized appropriately for their age.

Family Health/La Clinica, a community health clinic in Wild Rose, serves mainly a low-income population, including seasonal and migrant farmworkers and WIC-eligible clients. La Clinica provides immunizations as part of a full range of primary health care and health education services.

Sexually Transmitted Diseases

Teenagers are at increasingly high risk for acquiring sexually transmitted diseases because they are initiating sexual activity earlier; also, reflecting their developmental stage, they tend to believe they are infallible, that "it can't happen to me". Sexually transmitted diseases can have serious and lifelong complications, including pelvic inflammatory disease, ectopic pregnancy and other complications of pregnancy, and infertility in women and men.

National Findings

In the United States, about half the teenage population report being sexually active: in 1988, 51.5 percent of teens aged 15-19 reported having had sexual intercourse at least once.[39] This proportion increases with age, from about one-quarter (26 percent) at age 15 to three-quarters (75 percent) at age 19. Differences by race have narrowed during the 1980s; in 1988, 59 percent of black teens and 51 percent of white teens reported being sexually active. Younger teens, ages 15-17, showed greater differences by race (34 percent among whites and 48 percent among blacks) than did older teens, ages 18-19 (73 percent among whites and 76 percent among blacks). Data are not available for other racial/ethnic groups.

On average, teenagers wait about a year after becoming sexually active to begin using contraceptives. Teens who are older at first intercourse (18-19) are more likely to report use of some method of contraception than teens less than 18 years old.[40]

Each year, approximately one out of every six sexually active teens acquires a STD (2.5 million cases yearly). Teenagers represent approximately one-fifth of national STD cases.[41]

Adolescents and young adults are the age groups most likely to be infected by STDs (except for HIV and AIDS). Sexually active women less than 20 years old have rates of infection with *Chlamydia trachomatis* 2-3 times higher than women over 20. Nationally, teens represent 25 percent of reported cases of gonorrhea. It is recognized that infection with human immunodeficiency virus (HIV) during the teen years, through unprotected sexual activity and sharing of intravenous drug needles, will significantly contribute to HIV/AIDS morbidity and mortality for individuals 20-25 years of age.[42] In addition, the presence of one or more STDs increases the likelihood of acquiring HIV infection by several-fold.

Wisconsin Findings

An estimate of the prevalence of health risk behaviors among a sample of Wisconsin students in grades 9-12 was obtained from the 1991 Youth Risk Behavior Survey conducted in April 1991. Of the students surveyed, 43 percent of 9th grade students and 62 percent of 12th grade students reported having had sexual intercourse. Of sexually active seniors, 24 percent of males and 34 percent of females reported having had sexual intercourse with 3 or more people in their lifetime. Nearly half of all seniors reported having had sexual intercourse at or before age 16. Of those students who reported having ever had sexual intercourse the following high-risk sexual behaviors were reported: 43 percent of females and 47 percent of males reported multiple sex partners (more than 3 in lifetime); 22 percent of females and 26 percent of males reported using alcohol or drugs before last sexual intercourse; and 47 percent of females and 42 percent of males reported no condom was used during last intercourse. Five percent of students surveyed had been told at least once that they had an STD.[43]

Data on the number of reported cases of STDs in Wisconsin are drawn from reports to the Sexually Transmitted Disease Program in the Wisconsin Division of Health. Such data should be used with caution, because they are not reported with the same completeness by all providers of care. Private health care practitioners tend to underreport these conditions; conversely, reporting from STD clinics tends to be more complete. Also, the high number of cases for which race is unreported prevents an accurate assessment of incidence by race.[44]

In Wisconsin in 1991, 9,103 STD cases among people aged 10-19 were reported to the Division of Health, representing 36 percent of all reported cases. Among teenagers, chlamydia infections constituted the largest proportion of cases (61 percent), followed by gonorrhea (32 percent), herpes (3 percent), non-gonococcal cervicitis or urethritis (2 percent) and syphilis (1 percent). Wisconsin data indicate higher proportions of reported STDs among black teens, compared to their proportion of the population (Table 3). For the reasons stated above, no accurate assessment of incidence can be made.

Table 2. Reported Cases of Sexually Transmitted Diseases Among Adolescents Aged 10-19, By Race, Wisconsin 1991

Disease	Amer. Indian	Asian	Black	White	Other or Unspecified	Total
Chlamydia trachomatis infections	68	15	2,216	2,437	852	5,588
Gonorrhea	11	*	2,246	271	373	2,905
Syphilis	*	*	133	*	*	139
Herpes	*	*	83	119	26	233
NGU[1]	*	*	128	23	*	155
NGC[2]	*	*	23	39	6	70

Source: Sexually Transmitted Disease Program, Communicable Diseases Section, Bureau of Public Health, Wisconsin Division of Health. (Note: This program does not collect Hispanic ethnicity information.)
* Fewer than 5 reported cases; not shown.
[1] Non-gonococcal urethritis
[2] Non-gonococcal cervicitis

Programs

The STD Program in the Wisconsin Division of Health encompasses several significant program efforts, including: targeting adolescents and minorities for STD prevention and control; targeting male partners of chlamydia-infected females for testing and treatment; and increasing serologic screening for STDs and enhancing the timely reporting of results. Progress can be measured in a number of ways: the program has enhanced working relationships with community-based organizations; reporting of STDs has improved; Disease Information Specialists are performing venipuncture in high-risk communities; partner notification has increased and infected partners are examined, treated, and counselled; and public health educators are providing in-service training throughout Wisconsin.

The Milwaukee City Health Department maintains a comprehensive STD clinic that provides STD services to residents of Milwaukee. Because of morbidity levels, Disease Intervention Specialists (DIS) actively interview and follow-up persons who are infected with early syphilis and resistent strains of gonorrhea. The DIS in Milwaukee also perform investigative activities for individuals who are less than 16 years old who are pregnant and who are infected with gonorrhea and chlamydia. The STD program is networking with various community-based organizations throughout the state to expand and better tailor STD services to the communities it serves.

Currently the Milwaukee STD staff devotes 25 percent of its time to specific HIV activities such as pre/post-test counseling. All DIS are involved in partner notification for individuals who are positive for HIV infection and coinfected with either syphilis or resistent gonorrhea; DIS also provide follow-up services.

STD testing and counseling is available through local public health agencies throughout the state. For example, the Beloit Health Department funds STD prevention efforts at the Fourth Street Center. Since March 1975, it has served persons of all ages and incomes, especially those in Beloit's minority community. As part of its STD prevention efforts, the Fourth Street Center offers a walk-in clinic (no appointment necessary), individual education and counseling, follow-through on contacts, group educational presentations on request, and referrals to other community agencies when appropriate.

In Green Bay, the N.E.W. Community Clinic was formed in 1971 as the Green Bay Area Free Clinic; its mission is to provide access to care where there are gaps in the area health care delivery system. As part of its provision of medical care, the N.E.W. clinic offers STD testing and treatment on a walk-in basis for people with low incomes who are uninsured; charges are based on a sliding scale.

Planned Parenthood and other family planning agencies throughout the state offer STD testing services as well as limited STD counseling and follow-up. For further discussion of STDs, see the next chapter.

ADOLESCENT PREGNANCY

Adolescent Pregnancy

Teenage childbearing presents risks to both the mother and child. Girls who become mothers while still teenagers are less likely to finish school and achieve economic independence.[45] Infants of teenage mothers are more likely to be born prematurely and/or at low birthweight, and are more likely to die during the neonatal period.[46] [47] Children born to teenage mothers are also at higher risk of cognitive deficits and socioemotional problems; these risks reflect the unpreparedness for parenting of mothers who are children themselves. [48]

The teen mother's physical readiness for pregnancy is affected by her general health and nutritional status. Younger teens who are themselves still growing have special nutritional needs when pregnant. When pregnancy identification is delayed and prenatal care is less than adequate, risks to teen mothers and their infants increase.

Pregnant teenagers are more likely than older women to delay initiation of prenatal care and to have fewer visits. A disproportionately high number of very young teens obtain no prenatal care during pregnancy. Barriers to prenatal care include the teen's denial of the pregnancy, fear of parental reaction, and lack of knowledge about the need for prenatal care. Access to prenatal care may be limited by inadequate financial resources, lack of providers (especially those oriented to the needs of teenagers), and difficult-to-reach prenatal care sites.

Teenage mothers are disproportionately represented among economically and socially disadvantaged groups. Many of the health and social problems associated with teenage childbearing result from poverty-associated causes rather than from young age itself.[49] For young people already in poverty, a pregnancy during the teen years presents an additional barrier to completing school and attaining economic self-sufficiency.[50]

National Findings

The U.S. teen birth rate increased each year from 1987 through 1990. For older teens, aged 18-19, the 1990 rate of 87 births per 1,000 was the highest since 1974. For teens aged 15-17, the 1990 rate of 38 per 1,000 was the highest since 1973.[51]

Substantial variations in U.S. teen birth rates exist for racial and ethnic groups. In 1990, birth rates per 1,000 teens aged 15-19 were: 26 for Asian/Pacific Islanders, 42 for non-Hispanic whites, 81 for American Indians, 100 for Hispanics, and 116 for non-Hispanic blacks. As a proportion of all births, teens accounted for 10 percent of non-Hispanic white births, 23 percent of non-Hispanic black births, and 17 percent of Hispanic births.[52]

Although the proportion of sexually active teens increased rapidly during the late 1970s and early 1980s, recent data indicate only a small and non-significant increase since 1988 among male and female teenagers in the U.S.[53]

Wisconsin Findings

The 1980s marked a shift in a long-term pattern of decline in Wisconsin's teen birth rate. Modest annual increases occurred in the teen birth rate each year from 1988 to 1991. In 1991, the Wisconsin teen birth rate was 44 births per 1,000 females aged 15-19. The birth rate among older teens (aged 18-19) was 71 per 1,000; the birth rate among teens aged 15-17 was 25 per 1,000.

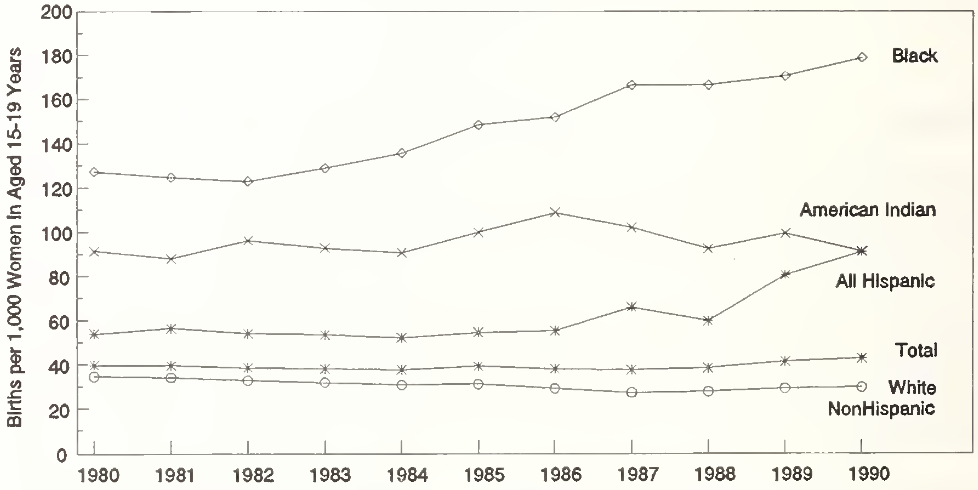
In 1991, there were 7,415 births to Wisconsin teenagers, representing about 10 percent of all births that year. Of all births to teens, 65 percent were to teens aged 18-19, 33 percent to teens aged 15-17, and 2 percent to teens below age 15. Among births to teens, 20 percent represented a second birth for the mother; 6 percent were the mother's third or fourth birth.

While the number of Wisconsin teenagers who were members of racial or ethnic minority groups grew during the 1980s, the number of white teenagers declined. The combined effect of racial differences in both population growth and birth rates meant that births to minority-group teens accounted for a larger proportion of total teen births in 1991 (41 percent) than in 1980 (20 percent).

In 1990, the teen birth rate was 179 per 1,000 among African American teens, 91 per 1,000 among American Indian teens, 98 per 1,000 among Mexican American teens, 121 per 1,000 among Puerto Rican teens, 43 per 1,000 among Cuban teens, 38 per 1,000 among other Hispanic teens, 121 per 1,000 among all Southeast Asian teens, and 225 per 1,000 among Hmong teens.[a]

African Americans. From 1980 to 1990, the number of births to black teenagers (aged 15 to 19) in Wisconsin increased from 1,351 to 2,091, a 55 percent increase. In comparison, the number of black teenage females in this age group increased by 10 percent. As a result, the black teen birth rate increased from 127 births per 1,000 in 1980 to 179 in 1990 (Figure 6). The increase in Wisconsin's black teen birth rate began in the early part of the 1980s and continued through 1990.[54]

Figure 6. Birth Rates Among Teenagers Aged 15-19
By Race/Ethnicity, Wisconsin, Selected Years 1980-1990



Note: Hispanics may be of any race. Asians are not included because of inconsistencies in classification.

Source: Wisconsin Center for Health Statistics.

American Indians. Since 1980, American Indian teenagers in Wisconsin have experienced an average of about 172 births each year, with no clear pattern of increase or decrease. In 1990 there were 91 births per 1,000 American Indian teens, about twice the rate in the total teenage population in Wisconsin. The

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[a] Calculation of race-specific birthrates is not possible for 1991, since population estimates by race are not available after 1990.

1990 teen birth rate among American Indians was identical to that for 1980, and lower than the comparable rate in 1970 (122).

Hispanics. From 1980 to 1990, the number of Hispanic teens aged 15 to 19 in Wisconsin increased by about 28 percent. The number of births to teens identified as Hispanic ranged between 180 and 250 per year from 1980 through 1988. In 1989, however, a change in the Hispanic identification item on the birth certificate (adding a checkbox to indicate Hispanic ethnicity) markedly increased the number of births to teenagers identified as Hispanic (from 251 in 1988 to 352 in 1989). Since 1989, the annual number of Hispanic teen births has continued to increase, to 441 births in 1991.

The Hispanic teen birth rate was relatively stable during the early 1980s, then increased just prior to the reporting change. The sharp upward climb in the Hispanic teen birth rate after 1988 probably reflects both improved reporting of Hispanic ethnicity and small increases in the rate of births to Hispanic teens. In 1990, the Hispanic population aged 15 to 19 was about 60 percent Mexican, 22 percent Puerto Rican, 1 percent Cuban, and 17 percent other Hispanic. The teen birth rates for these groups in 1990 were 98 per 1,000 for Mexican teens; 121 for Puerto Rican teens; 43 for Cuban teens; and 38 for other Hispanic teens.

Asians. The Wisconsin population of Asian females aged 15 to 19 more than doubled in the ten years from 1980 to 1990. In 1990, there were 2,438 Asian teenage females in Wisconsin; of these, about 43 percent had ancestry of either Hmong, Laotian, Cambodian or Vietnamese. These four groups, who accounted for about 90 percent of the births to Asian teens in 1990, experienced a teen birth rate of 121 births per 1,000. The highest teen birth rate occurred among the Hmong, with a teen birth rate of 225 births per 1,000 Hmong females aged 15 to 19.

Programs

Adolescent sexual activity and its effects--pregnancy, sexually transmitted diseases--are not a problem only for teenage girls. The attitudes, motivations, and behavior of teenage boys are as central to the problems of adolescent pregnancy as those of their female partners.[55]

Since November 1990, the Beloit Health Department has provided pregnancy prevention services to Beloit through its Teen Peer Education Program. The program targets junior high school students in a school- and family-based project that utilizes the following strategies to prevent pregnancy among high-risk youth: case-management services; family visits and teen/family activities to improve family communication; academic tutoring to improve scholastic achievement; and educational activities that promote healthy alternatives to early pregnancy, encourage sexual abstinence, and increase self-esteem. About 40 to 50 junior high school students meet twice weekly with the project director and trained high school peer educators. At least one home visit is made by the project director to assess family needs, to explain the goals of the program, and to gain support for the project. Four teen/family activities are held each year to encourage positive parent-and-child communication and to reinforce program goals.

The S.N.A.P. program (Stop Non-intended Adolescent Pregnancy) is another aspect of adolescent pregnancy prevention services provided through the Beloit Health Department. At the S.N.A.P. drop-in site at the Beloit Inner City Council location in the Merrill community, adolescents are offered confidential prevention services that include group discussions, video viewing, free pamphlets, and referrals to counseling. This program is aimed at pre-teens and teens at risk of teenage pregnancy.

The Beloit Health Department also provides parent support services, with funding from the United Way, the Wisconsin Bureau of Children, Youth, and Families, and the Beloit Department of Public Instruction. Parent support services include working with teen parents to facilitate high school completion, and working with parents at risk of child abuse and neglect. Program activities include one-on-one support for families at risk, parenting classes and support groups, and on-on-one academic support for teen parents in high school. The targeted population is low-income, primarily teen parents, parents with inappropriate expectations of their children, parents who lack social support. About 50 families are being served.

As part of its social, mental health, and case management services, the New Concept Self-Development Center in Milwaukee provides services for teenage parents and their children. Teen mothers and fathers are offered weekly support and parenting groups to help them stay in or re-enter school and to prevent repeat pregnancies. New Concept offers a variety of specialized, culturally sensitive programs related to teen parents, child abuse prevention, sexual assault treatment, and perinatal addiction, emphasizing outreach in clients' homes and groups at community sites.

The Adolescent Pregnancy Prevention and Services (APPS) Board is a state agency that works on both local and state levels to prevent teen pregnancies in Wisconsin. In schools, community centers, and health facilities around the state, programs sponsored by the Board offer comprehensive services to teens at risk of early pregnancy and their families through education, information, peer support and advocacy groups, individual counseling, career exploration, and recreational activities. The programs cover a wide age range, encompassing adolescents from 10 to 18. Training and educational materials are designed to meet the maturity levels of different age groups. Programs are also planned to be respectful of gender and cultural issues and actively work against bias and stereotypes.

Wisconsin has two state programs aimed directly at teen pregnancy prevention: one in the Department of Health and Social Services and one at the APPS Board. DHSS grants are limited by law to the five counties in the state with the highest rates of teen pregnancies; APPS Board grants are available to any community in Wisconsin.

BEHAVIORAL RISKS

TOBACCO USE

ALCOHOL AND OTHER DRUG ABUSE

Tobacco Use

Smoking is the leading cause of preventable death in the United States, and most people who smoke started as teenagers. Surveys show that teenage smokers underestimate the addictive properties of tobacco and are unrealistic about how hard it will be to quit. Prevention of smoking-related disease and death therefore is aimed at discouraging teenagers from starting to smoke. The younger one starts to smoke, the greater is the likelihood of becoming a heavy smoker and the higher the risk for smoking-attributed illness or death.[56] [57]

The overall prevalence of teenage smoking remained steady through the 1980s, although adult smoking decreased during the same time.[58] The major change in adolescent smoking is that teenage girls are now as likely as teenage boys to be current smokers. In addition, the average age of smoking initiation has been decreasing.

The naivete of adolescents about the addictiveness of tobacco use can be inferred from the proportion of teenage smokers who believe they will be smoking in one year. Just 20 percent of 12-13-year-olds who were smokers reported that they would be smoking in one year, while 45 percent of 16-18-year-old smokers believed that. Among teenage smokers, both the proportion who report daily smoking and the average number of cigarettes smoked per day increase with age; this reflects the habit-forming properties of cigarette smoking.[59]

Compared with nonsmoking teens, smokers were more likely to believe that it was safe to smoke for 1-2 years. Smoking teens were also more likely to think that cigarettes help people relax, keep weight off, and feel comfortable in social situations. Overall, 39 percent of teenage smokers thought that they could stop smoking any time they wanted.[60]

Teenage Beliefs Regarding Smoking

Percentage responding "yes" to the following statements:

	Smokers	Nonsmokers
It is safe to smoke for 1 or 2 years	21%	3%
Cigarettes help people relax	59	16
Smoking helps keep weight down	30	13
Smoking helps people feel comfortable in social situations	59	30
(If I started) I can stop any time I want	39	11

Source: Allen, et al., National Center for Health Statistics, 1993.

A variety of factors are associated with teenage smoking. Compared with nonsmoking teenagers, more smoking teenagers reported parents and/or siblings who smoke. Fifty-five percent of smoking teenagers reported that they thought most or all people their age smoked, while only 9 percent of nonsmoking teens had that perception. Nonsmokers tended to talk with their parents about problems, participate in organized sports, and like school a lot. Compared with nonsmokers, smokers were more likely to describe themselves as below average in school and to report skipping school in the last two weeks.[61]

Teenagers who smoke are also more likely to engage in other risk behaviors, including other drug use. Alcohol use is the most common risk behavior reported among teenage smokers. Smokers were more likely than nonsmokers to report that most of their friends smoked marijuana, used crack or other cocaine, drank weekly and got drunk at least monthly, and rode in a car with a driver who was using drugs or alcohol. Smokers were also more likely to have friends who engaged in sexual activity.[62]

Smokeless tobacco use appears to be increasing rapidly throughout the United States, especially among teenage boys. The use of smokeless tobacco is a serious health risk and is not a safe alternative to smoking. There are three major health risks associated with the use of smokeless tobacco: oral cancer, the development of leukoplakias and other oral conditions, and nicotine addiction.

National Findings

According to a 1989 national survey (TAPS), an estimated 16 percent of all U.S. youth ages 12-18 were current smokers.[a] The percentage of smokers was similar among boys (16 percent) and girls (15 percent). By race/ethnicity, the proportion of current smokers was 6 percent among African American teens and 12 percent among Hispanic teens. (TAPS data for 1989 on other ethnic groups was not available.)

Combined data for the years 1985-1989 provided the following estimates of cigarette smoking prevalence among U.S. high school seniors (measuring any use within the 30 days preceding the survey): 16 percent among black males and 13 percent among black females; 24 percent among Mexican American males and 19 percent among Mexican American females; 22 percent among Puerto Rican/Latin American males and 25 percent among Puerto Rican/-Latin American females; 17 percent among Asian males and 14 percent among Asian females; and 37 percent among Native American males and 44 percent among Native American females.[63] (The comparable proportions were 30 percent of white males and 34 percent of white females; no overall prevalence that combined all races was reported.)

Teenage Smokers and Related Home/School Factors

	Smokers	Nonsmokers
Parent(s) smoke	46%	36%
Older sibling(s) smoke	17	5
Parent(s) and older siblings smoke	35	3
No smokers in household	42	59
Most or all people my age smoke	55	9
Talks about problems with parents	39	59
Involved in organized physical activities	52	69
Reports doing below average in school	11	2
Likes school a lot	29	46
Skipped school in last 2 weeks	10	2

Source: Allen, et al., National Center for Health Statistics, 1993.

Wisconsin Findings

In a sample of schools throughout Wisconsin,[b] a 1991 survey of students in grades 9-12 found that 22 percent of females and 23 percent of males reported smoking on at least 6 of the 30 days preceding the survey. Nine percent of female respondents and 12 percent of male respondents smoked 6 or more cigarettes on the days they smoked. Overall, 12 percent of all students reported smoking cigarettes on all of the past 30 days. The highest percentage of daily smokers (one cigarette per day for the past 30 days) started smoking at age 13 or 14 (35 percent). Sixty-nine percent of female

Teenage Smokers and Other Risk Behaviors

Percentage reporting that most of their friends:

	Smokers	Nonsmokers
Smoke marijuana	16%	2%
Use crack or cocaine	2	<1
Drink weekly	50	15
Get drunk monthly	51	12
Have sex	65	19
Have ridden with someone using alcohol or drugs	30	5

Source: Allen, et al., National Center for Health Statistics, 1993.

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[a] Data are from the Teenage Attitudes and Practices Survey (TAPS), a national telephone survey of a representative sample of 12-18-year-olds conducted as part of the 1989 National Health Interview Survey. Current smokers were defined as those who had smoked at any time during the 30 days preceding the survey interview.

[b] The 1991 Wisconsin Youth Risk Behavior and HIV/AIDS Prevention Education Survey, sponsored by the Wisconsin Department of Public Instruction.

smokers and 59 percent of male smokers reported trying to quit in the past 6 months.[64] In this same statewide survey of students in grades 9-12, chewing tobacco use was reported by 19 percent of male respondents and 3 percent of female respondents.

The 1991 Milwaukee Youth Survey, a survey of middle and high school students in the greater Milwaukee area,[a] found that 8 percent of students overall had used tobacco products daily during the year preceding the survey; 69 percent had used no tobacco products during the year (Table 4).[65] ("Tobacco products" included cigarettes, cigars, pipe, snuff, chew; no separate question was asked about cigarette use only.)

White students (12 percent) and American Indian students (11 percent) were most likely to report daily use of tobacco products, and least likely to report no use of tobacco during the past year (62 percent and 64 percent, respectively). Black students and Asian students reported the lowest rates of smoking and the highest rates of non-use. Results for Hispanic students fell between these two comparative extremes.

Table 3. **Tobacco Use Reported by Students in the Milwaukee Youth Survey (Grades 6-12), 1991**

	Tobacco Use in the Past Year				
	Not at all	Once or twice	Once a week	Several times a week	Daily
All Students	69%	16%	4%	3%	8%
American Indian	64	16	4	4	11
Black	79	14	2	2	3
Hispanic	68	15	5	4	8
Asian	79	12	3	3	3
White	62	17	5	4	12
Other	67	16	4	3	10

Source: Greater Milwaukee Youth Survey, unpublished data.

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[a] The second Milwaukee Youth Survey was conducted in nine school districts located throughout the Greater Milwaukee Area between November 1991 and January 1992. A total of 34,791 students from grades six through 12 in the nine public school districts participated by responding to a 126-item questionnaire. The participating school districts were: Cudahy, Franklin, Greenfield, Hamilton-Sussex, Mequon, Oak Creek, Shorewood, Whitefish Bay, Milwaukee and its partnership schools.

Alcohol and Other Drug Abuse

Early experimentation with alcohol and illicit drugs has been established as an important marker for future persistent drug use.[66] Among teenagers, alcohol and drug use is associated with increased risk of motor-vehicle-related and other kinds of injury, early and unprotected sexual activity, pregnancy, and aggressive behaviors. Much of the information about substance abuse prevalence among youth comes from studies of high school students, and therefore excludes some teens that may be at highest risk for alcohol and drug use: school dropouts, institutionalized youth, and the homeless.

From both advertising and adult role-modeling, children and teenagers are the targets of conflicting and confusing messages about the use of alcohol. Information about the negative effects of alcohol and drug use may be overwhelmed by the acceptance of drinking behavior by peers and adults in the teenager's environment. It is often the social nature of using alcohol and other drugs, rather than their short-term effects or long-term consequences, that most influences substance abuse by this age group. Following tobacco and alcohol, marijuana is the next most commonly used illicit drug by teens.

Risk factors that may predispose a teenager to alcohol and drug use are variable; the risk factors any teenager is exposed to are individual, as is his/her ability to cope with them.[67] The number and pattern of risk factors experienced by teenagers vary with racial/ethnic group, accounting for the variations in alcohol and drug use seen between groups. One study found the following factors related to a higher risk of alcohol/substance use among 6th and 7th grade boys: low family pride, family substance use problems, parent smoking, low self-esteem, symptoms of depression, suicide attempt, perception of high substance use by peers, perception of peer approval for substance use, and willingness to engage in non-normative behavior.[68]

National Findings

Each year, the national Youth Risk Behavior Survey asks students in grades 9-12 about their current (within the past 30 days) and lifetime use of substances.[69] In 1991, 82 percent of students reported having used alcohol, 51 percent reported current use, and 31 percent reported having consumed five or more alcoholic drinks on at least one occasion within the last 30 days. Thirty-one percent of students reported having used marijuana, with 15 percent reporting current use. Six percent reported having used cocaine, with 2 percent reporting current use. In general, a greater proportion of boys than girls reported substance use; girls were as likely as boys to report ever having consumed alcohol. No estimates for 1991 by race/ethnicity were reported.

According to 1991 national household survey data,[a] 20 percent of 12-17-year-olds reported using alcohol in the month preceding the survey; 4 percent reported using marijuana, and 0.4 percent reported using cocaine.[70] In this 1991 survey, 20 percent of black teens ages 12-17 reported alcohol use in the past month, the same as for the general population aged 12-17; however, over the four years 1985-1991, blacks aged 12-17 had generally lower rates than the 12-17-year-old population as a whole. In 1991, 23 percent of Hispanic teenagers 12-17 years of age reported using alcohol in the past month, with a range of 19-25 percent from 1985-1991. (No results for other racial/ethnic groups were reported from this survey.)

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[a] Data are from the National Household Survey on Drug Abuse, 1991.

A school-based survey of high school seniors across the nation is conducted annually.[a] In 1990, 57 percent of all high school seniors reported using alcohol in the previous month; 14 percent reported using marijuana; and 2 percent reported using cocaine.[71] Black high school seniors reported markedly lower rates of substance use: 33 percent reported using alcohol in the past month, 5 percent reported using marijuana, and 0.5 percent reported using cocaine. Among Hispanic high school seniors, 49 percent reported alcohol use in the month preceding the survey, 11 percent reported marijuana use, and 3 percent reported use of cocaine.[72] In general, the proportion of high school seniors reporting use of alcohol and other substances has been dropping since 1985.

Several years of data from the annual survey of high school seniors were combined to provide estimates of alcohol use among subgroups of the Hispanic population, as well as among American Indians and Asians.[73] In 1985-1989, 65 percent of Mexican American male high school seniors and 51 percent of Mexican American female high school seniors reported current alcohol use in the past 30 days, while 55 percent of Puerto Rican/Latin American males and 43 percent of Puerto Rican/Latin American females reported this use. Among American Indian high school seniors in 1985-1989, 69 percent of males and 60 percent of females reported drinking alcohol in the 30 days preceding the survey. Among Asian high school seniors in 1985-1989, 44 percent of males and 34 percent of females reported using alcohol in the month preceding the survey.

Most available information shows relatively consistent national findings regarding patterns of substance use. Asian youth tend to report the lowest levels of alcohol and other drug use. White youth report higher levels than do black youth, with Hispanic youth generally between these two groups. Native American youth tend to report the highest levels of alcohol and other drug use.[74]

Wisconsin Findings

The Wisconsin Youth Risk Behavior Survey collects information about drug and alcohol use from high school students (grades 9-12) in a sample of Wisconsin schools. (Statewide information on alcohol and drug use by teenagers in Wisconsin is not available.)

Among high school seniors surveyed, 71 percent of females and 61 percent of males reported drinking alcohol on at least one day during the last 30 days ("current" alcohol use).[75] A greater proportion of females than males reported current alcohol use in all grades except grade 11. Thirty-five percent of all high school students surveyed reported drinking five or more drinks within a couple of hours at least once in the past 30 days. Questions about several risk behaviors that are associated with drinking were also asked. About half (49 percent) of the high school students surveyed said they had had sexual intercourse; of these, 24 percent reported they had used alcohol or other drugs before their last intercourse. Forty-one percent of respondents reported they had ridden in a car in the past 30 days whose driver was using alcohol and/or other drugs.

Current marijuana use (within the past 30 days) was reported by 9 percent of female respondents and 14 percent of males. Fourteen percent of males and 12 percent of females reported that they had used other illegal drugs, or drugs without a physician's prescription, at least once in their lifetime. Cocaine use within the last 30 days was reported by 1 percent of females and 2 percent of males; 3 percent of all students surveyed said they had used crack or freebase forms of cocaine at least once in their lifetime. Three percent of all respondents reported they had injected an illegal drug at least once in their lifetime.

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[a] Data are from the National Institute on Drug Abuse: Monitoring the Future Study (annual surveys).

Because the students surveyed in the Wisconsin Youth Risk Behavior Survey included relatively small numbers of students from racial and ethnic minorities, no results by race/ethnicity were possible. Instead, results of a large survey of Milwaukee-area students can provide some information about drug and alcohol use among students in that city's large and ethnically diverse population.[76]

The Greater Milwaukee Youth Survey was conducted among students in grades 6-12 in nine school districts in the Milwaukee area between November 1991 and January 1992. The survey included questions about drug use, which was defined to include tobacco, alcoholic beverages, and illicit drugs such as marijuana and cocaine. Among the approximately 32,000 students in grades 6-12 who responded to the survey, 15 percent identified "my use of drugs" as a problem; only 4 percent said it was a very serious problem. Even among frequent drug users, comparatively few cited their drug use as a serious problem. About one-quarter (24 percent) of high school students who reported frequent drug use said they viewed their use of drugs as somewhat of a problem or a very serious problem; they were more likely to consider it a minor problem (31 percent) or as not a problem (45 percent).

There were large differences among Milwaukee-area high school students in the proportion who reported never using drugs (neither tobacco, alcohol, nor any illicit drug). Overall, 27 percent of high school students reported being non-users. Asian students (43 percent) and African American students (35 percent) were most likely to report being non-users, while white students (20 percent) and American Indian students (21 percent) were least likely. Thirty-two percent of Hispanic students reported being non-users of tobacco, alcohol and other substances.

Among Milwaukee-area students in grades 6-12, 17 percent reported using beer or wine at least once per week, and 10 percent reported using hard liquor that often (Table 5). Weekly or more frequent use of marijuana was reported by 7 percent of 6th-12th-grade students. The proportion reporting weekly or more frequent use of other drugs was 3 percent each for cocaine, crack, and LSD. Results varied by race/ethnicity.

Table 4. Greater Milwaukee Youth Survey Results for 1991-1992: Percent of Students in Grades 6-12 Reporting Specific Substance Use Once a Week or More Often, By Race/Ethnicity

Race/Ethnicity	Beer or Wine	Hard Liquor	Marijuana	Cocaine	Crack	LSD
All students	17%	10%	7%	3%	3%	3%
American Indian	20	15	11	5	6	5
Black	12	8	6	3	3	3
Hispanic	18	12	10	4	3	4
Asian	10	7	5	4	4	5
White	20	11	6	2	2	3
Other	18	13	9	6	6	6

Source: Greater Milwaukee Youth Survey. Based on responses from approximately 32,000 students in nine Milwaukee-area school districts (including about 590 American Indians, 11,540 African Americans, 2,290 Hispanics, 900 Asians, 15,500 whites, and 900 "other" students).

Programs

The Beloit Inner City Council provides services to youth and adults in low-income, socially disadvantaged areas of Beloit. Activities are directed at promoting community education and on-going support groups in all areas relating to alcoholism and other drug use, as well as AIDS/HIV information; and providing counseling and appropriate services or treatment referrals. Youth programs include a "just say no" emphasis, arts and crafts, self-esteem building, and year-round prevention classes and trips. Another

BICC-sponsored activity is the "Inner City Players," involving community youth in theatrical skits that portray alcohol, drugs, and AIDS issues. BICC charges no fees for its services.

For Native American youth, conflicts between cultural ideals and behavioral realities, parent and community attitudes about substance use, and concomitant adult drug/alcohol use role models are major influences on youthful experimentation and continued use of alcohol and drugs. Just as the divergence from cultural traditions has created some of the stresses that may influence drug and alcohol use, the revival of traditional activities, rituals and relationships is being utilized to combat substance abuse. In addition to providing a connection between the Indian culture and today's world, this revival has also moved the re-establishment of the relationship between youth and the elderly as teachers and mentors. Interventions that serve to make children comfortable with both tribal and non-Indian ways have been found to encourage the lowest drug and alcohol use.[77]

The Maehnowesekiyah Treatment Center near Gresham, Wisconsin, provides comprehensive AODA prevention and treatment services to members of the Menominee Indian Tribe. TRAILS (Testing Realities and Investigating Life-styles) is a drug abuse prevention program that provides youth with fun activities rich in Menominee culture and tradition. At the bi-weekly meetings participants work on crafts such as painting, making god's-eyes, shawls, and leatherwork. The meetings also include discussions of such topics as handling peer pressure and the dangers of drugs, alcohol, and tobacco. Monthly outings for swimming, roller-skating, or other activities are another aspect of TRAILS. A Drumming and Dancing event is held twice each month. Through these activities, the TRAILS program seeks to build the children's pride in their Menominee heritage and in themselves; without this, there can be no "drug prevention."

As part of its AODA services to the Menominee community, the Maehnowesekiyah Treatment Center provides adolescent outpatient services, a support group, and an aftercare program, as well as inpatient AODA treatment. Inpatient care for adolescents is offered at the Maehnowesekiyah Sunrise Group Home, owned and operated by the Menominee Indian Tribe. The group home enables adolescents who have completed primary treatment for their drug or alcohol addiction to continue their recovery while slowly reuniting with their family and home environment. Parents participate in family therapy, progress sessions, and individual sessions if needed. Aftercare planning includes attention to continued independent living skills, cultural values and beliefs, alcohol awareness, family relationships, and self-esteem.

The Social Development Commission in Milwaukee interviewed 194 Milwaukee adolescents and young adults ages 12-25 to gain information about their daily experiences with alcohol and drugs, and information about their family, friends, and community.[78] Personal interviews (in English, Spanish, Hmong, or Laotian, as appropriate) were conducted with individuals of African American, white, Mexican American, Puerto Rican, Central American, Native American, Hmong and Laotian heritage. Survey participants were recruited through community organizations, and thus are not representative of all Milwaukee youth. Nevertheless, survey results supply information about the family, social, neighborhood, and cultural contexts of substance abuse in Milwaukee, as a basis for planning better treatment and prevention strategies.

Most alcohol and drug use among interviewed youth occurred primarily in a social setting. Both users and non-users perceived strong peer pressure to use drugs. Peer pressure included the assurances of being accepted, having fun, and not being harmed by using the drugs. Those reporting drug/alcohol use were more likely to report "hanging out" with friends as their primary form of recreation. Non-users were more likely to be involved in structured community activities such as sports, volunteering, and church groups.

Family members had a strong influence on a young person's decision about whether to become involved in alcohol and drugs. Those who reported having close family members who were drug or alcohol users were more likely to be substance users/abusers themselves. It was also true that those with close family members who were abstainers were also more likely to be abstainers.

Young people of all cultures interviewed in this survey reported a greater use of drugs when they had "nothing to do," and in the resulting social situations. More non-users than users reported involvement in community projects and activities, including sports and volunteering, that build upon and foster the ethnic pride of young people. Understanding this use of drugs and alcohol as a "default activity," or something to do when there is nothing to do, is important for program and policy planners.

AMBULATORY MEDICAL CARE

Ambulatory Medical Care

Ambulatory medical care for children includes preventive health care, developmental assessment, and treatment of acute and chronic conditions. Access to ambulatory care is closely tied to socioeconomic status and insurance coverage. High-quality health care for children includes regular visits during early childhood to assure that immunizations are current, to assess growth and development, and to evaluate and guide safety and parenting skills. As children grow, regular ambulatory visits need not be as frequent as during the first five years, but are still important to monitor growth and development and to introduce issues such as menarche, pregnancy, and substance abuse. Familiarity with one health care provider is conducive to this kind of ongoing assessment, as well as to the timely treatment of the acute illnesses and injuries common among young people.

Visits to Physicians

Based on household survey data collected in the years 1989-1991, the proportion of Wisconsin children ages 0-17 who reportedly saw a physician at least once during the past year was 83 percent (Table 1). The percentage did not vary significantly by race/ethnicity: 90 percent of African American children, 87 percent of Asian children, and 87 percent of Hispanic children were reported to have seen a physician within the past year.

Table 5. **Utilization of Physician Services by Wisconsin Children Aged 0-17, By Race/Ethnicity, 1989-1991**

Racial/Ethnic Group (Sample size)	Physician Visit Within Past Year	Physical Exam Never	Physical Exam In Past Year
African American (246)	90%	2%	90%
Asian (71)	87	2	77
Hispanic (133)	87	7	77
Total Aged 1-17 (5,556)	83	2	74

Source: Wisconsin Family Health Survey, 1989-1991.
Note: Too few American Indian children were sampled to produce reliable estimates.

Physical Examination

According to 1989-1991 survey results, 74 percent of Wisconsin children aged 0-17 had reportedly had a general physical examination in the past year. A physical examination within the past year was reported for 90 percent of African American children, 77 percent of Asian children, and 77 percent of Hispanic children. (These percentages were not statistically different from the overall percentage.) The small number of American Indian children in the sample precludes presenting estimates for that population.

The percentage of children aged 0-17 who had reportedly never had a physical examination was 2 percent in most groups. The exception was Hispanic children; an estimated 7 percent had never had a physical examination.

Dental Visits

Maintaining oral health is an important aspect of preventive health care for children. Regular dental visits provide the opportunity for early diagnosis, oral health education, preventive services, and early restorative treatment. Based on Family Health Survey results for 1989-1991, an estimated 17 percent of Wisconsin children aged 2-17 had not seen a dentist within the year preceding the survey; this includes an estimated 11 percent of children who had never been to a dentist. Perhaps because of small sample sizes, these proportions did not vary significantly by race/ethnicity.

These Wisconsin survey results probably underestimate the proportion of children in Wisconsin who do not receive timely dental services. According to 1989 data from the National Health Interview Survey, no dental visit within the year preceding the survey was reported for 44 percent of black children, 45 percent of Hispanic children, and 33 percent of all children aged 2-17 in the U.S. These percentages included an estimated 19 percent of black children, 27 percent of Hispanic children, and 17 percent of all children aged 2-17 who had never seen a dentist. No results were reported for children in other racial/ethnic groups.[79]

Programs

Operating in about 17 counties in western Wisconsin, "Kids Care" is a program to provide basic health care to children and youth under 20 years of age. With funding from private, state, and federal grants, Kids Care is sponsored by county public health agencies, the Head Start Family Education Program, and the Center for Public Representation in Madison and Balsam Lake. Kids Care is aimed at children who are not receiving Medical Assistance and who need financial assistance to secure preventive health care services. On a sliding-fee-scale basis (depending on income), Kids Care pays for physical examinations (for preventive care; and for summer camp, kindergarten, and day-care physicals), follow-up diagnostic visits to a doctor, dentist, and eye doctor; diagnostic tests, lab work, and x-rays; and family health benefits counseling.

As part of its South Side Healthy Families Project, the Sixteenth Street Community Health Center in Milwaukee provides pediatric care and follow-up services to residents of the near south side of Milwaukee. Families served are generally low-income, uninsured and underinsured, and ethnically diverse (Hispanic, Hmong, Laotian, and African American). With its perinatal counterpart, the pediatric case management program is an intensive care coordination program that assesses families for their medical and social risks and follows them from conception through early childhood. The staff provide high-quality and timely medical and social services, provide health education, and make home visits. Particularly high-risk or very involved cases are discussed at multi-disciplinary case conferences twice monthly; these conferences include physicians, nurses, case managers, social workers, parent educators, health educators, and outreach personnel. Perinatal case management services were begun in 1987; the pediatric component was added in January 1992.

"HealthCheck" is a federally-mandated comprehensive preventive health examination program for Medical Assistance recipients under 21 years old. The purpose of HealthCheck is to identify health problems early and assure that timely follow-up treatment is received. Outreach and case management are also critical components of the HealthCheck program. According to the Memoninee Tribal Clinic in Keshena, approximately 500 Native American children per year receive Health-Check assessments through the clinic.

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ADULTS AGES 18–44 AND 45–64

Introduction

The young adult years, defined here as ages 18-44, are for many people a relatively healthy time in which issues related to child-raising, jobs, and housing predominate over health concerns. All of these aspects of living can affect health over time, however. For example, unemployment often means the loss of health insurance; and many jobs do not provide health insurance as a benefit or provide insurance that does not cover all necessary care. Much of the health care received during the young adult years is related to prenatal care and childbirth; thus young men, as well as women who receive little prenatal care, may be less likely to get regular preventive care. Preventive health care for young adults is important in detecting and treating the risks to health that can lay the foundation for health problems in later life, such as high blood pressure, diabetes, smoking, stress, and other risks to health.

During middle age, roughly defined as ages 45-64, the children in the family may be grown but this does not always mean that they are out of the nest. In some families, grown children live with a parent or parents. Several generations may live together, grandparents may provide child care, and many families value the supportive contributions of extended family members. During their middle years, many people begin to experience symptoms of one or more chronic diseases that will follow them into old age: arthritis, hypertension, heart disease. The effects of smoking and other behaviors that may have been coping mechanisms early in adulthood now may become apparent as a higher risk for chronic diseases such as cancer and heart disease.

For those living in poverty, decisions based on financial necessity can affect the health of one or more family members. For example, if a child in the family needs shoes, perhaps the prescription medicine needed by the mother for her high blood pressure is not purchased that month. Or if the rent increases, food purchases may have to be scaled back; fresh fruits and vegetables may become unaffordable. Stress, which is more pervasive at lower income levels, can negatively affect health and contribute to many illnesses. On the other hand, support networks of friends and extended families can provide benefits to health and well-being; extended families are an important aspect of resiliency in many minority communities. Churches, schools, and community centers are also important resources.

"Health risk assessment for adults involves a spectrum of complex issues. These include cardiovascular and cancer prevention and screening; occupational health; lifestyle assessment that includes assessment for risk of HIV infection, substance abuse and smoking; nutrition and oral health; injury prevention; and specific community health issues such as violence or housing. Moreover, psychosocial issues and risk will change as the person ages from one decade to the next." [1]

What follows is an examination of some of the diseases and conditions that affect the health of young and middle-aged adults. Discussions of specific health problems will include cause-specific death rates and hospitalization rates,[a] household survey findings on risk factors, and background information from national and regional studies.

In young adulthood, rates of death and hospitalization begin to rise; injuries (both unintentional and intentional) increase steeply in frequency, as do problems with substance abuse. Hospitalizations for chronic diseases (such as heart disease, cancer, and diabetes) rise with age, becoming much more common among people in their 40s and 50s than they were among people in their 20s and 30s. Therefore, this chapter on adult health will, where possible, consider two age subgroups separately: ages 18-44 (coinciding roughly with the childbearing years, and termed "young adulthood"), and ages 45-64 (termed "middle age").

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[a] This chapter presents two kinds of rates: (1) overall age-adjusted rates, which are summary measures based on all deaths or hospitalizations for a given condition (regardless of age); and (2) age-specific rates for the 18-44 and 45-64 populations, which present the actual number of events per specified population in the age group.

RISK FACTORS

SMOKING

OBESITY

ALCOHOL ABUSE

HYPERTENSION

Smoking

Smoking causes more than one of every six deaths in the United States. For more than a decade the United States Public Health Service has identified cigarette smoking as the most important preventable cause of death in our society.[2]

People who quit smoking before age 50 have only half the risk of dying in the next 15 years compared with people who continue to smoke. Quitting smoking also reduces significantly the risk of lung cancer, coronary heart disease, stroke, chronic obstructive pulmonary disease, influenza, pneumonia, peripheral artery occlusive disease, abdominal aortic aneurysm, and stomach ulcers. Smoking cessation has immediate benefits for pregnant women, reducing the likelihood of a low-birthweight birth, premature birth, and other unhealthy birth outcomes. Infants and children are less likely to develop respiratory infections or to have acute otitis media (ear infection) or persistent middle ear effusions if their parents do not smoke.

Smoking prevalence in the United States has been declining annually since 1965, and the decline has been more rapid since the mid-1980s. Factors that may have contributed to the accelerated decline in smoking include a decrease in the social acceptability of smoking, the increased cost of cigarettes, and an increased awareness of the health consequences of active and passive smoking.[3] Smoking prevalence is decreasing across all race-gender groups studied, although at a slower rate for women than men.[4]

Historically, men in this country have had higher smoking rates than women. During the last two decades, however, the prevalence of smoking has fallen more rapidly among men, so that eventually the rate among women may be similar to or even surpass that of men. Studies suggest that differences in smoking initiation, rather than cessation, are primarily responsible for the converging of smoking prevalence rates among men and women. During the last ten years, smoking initiation has been declining among young men, while it has remained constant among young women. As a result, young women have been smoking at a higher rate than young men since about 1984. The message to avoid starting smoking has been less successful in reaching young women than in reaching young men.[5]

National Findings

According to national estimates from the 1990 National Health Interview Survey (NHIS), the prevalence of smoking was 26 percent in the adult U.S. population as a whole. Smoking prevalence was estimated to be 33 percent among black men, 25 percent among Asian/Pacific Islander men, 40 percent among American Indian/Alaskan Native men, and 28 percent among white men. Prevalence rates among women were generally lower: 21 percent among black women, 6 percent among Asian/Pacific Islander women, 36 percent among American Indian/Alaskan Native women, and 24 percent among white women.

Two sources of national information suggest that male Hispanics have a higher prevalence of smoking than do females. The 1990 National Health Interview Survey estimated that the national prevalence of smoking was 31 percent among Hispanic men, and 16 percent among Hispanic women.[6] Other national estimates, derived from the Hispanic Health and Nutrition Examination Survey for 1982-1984, show the prevalence of smoking among some Hispanic groups to be higher than the NHIS estimate: 43 percent among Mexican American males, 40 percent among Puerto Rican males, and 42 percent among Cuban males; and 24 percent among Mexican American females, 30 percent among Puerto Rican females, and 24 percent among Cuban females.[7] The differing estimates for Hispanics need to be treated with caution.

In a 1989 survey of recently arrived Southeast Asian immigrants to the state of Washington,[8] it appeared that smoking rates were high among some respondents in the sample. Men (43 percent) were much more likely than women (6 percent) to smoke, and prevalence of smoking was higher for men aged 30 years or older (55 percent) than for men aged 18-29 years (30 percent). Among men, prevalence of smoking was highest for Laotians (51 percent), followed by Vietnamese (42 percent), and Cambodians (33 percent). It is unclear whether these results are generalizable to the existing Southeast Asian immigrant population in the United States, but they suggest at least the strong possibility that the risk of smoking-related diseases may be high among some Southeast Asian populations in this country.

Based on rates of death from tobacco-associated causes, black Americans bear a disproportionate share of the burden inflicted by tobacco use in our society.[9] For example, blacks nationally have the highest incidence rate for all cancers combined and the highest overall cancer mortality rates. One hopeful sign found nationally is that among black men, rates of smoking prevalence and initiation are now decreasing faster than among white men; their quit rate is increasing faster as well.[10] Unfortunately, these trends are not found among black women. If trends remain constant, national prevalence rates for men and women will be about equal in 1995, but after that a larger proportion of women will be smokers, and black women will become the racial/sex group with the largest proportion of smokers.[11]

Wisconsin Findings

Overview. Household survey results for 1987-1991 suggest that 30 percent of men and 28 percent of women in Wisconsin smoke cigarettes (Table 1). According to the survey, 51 percent of black men and 34 percent of black women are smokers. Among Hispanic men and women combined, 35 percent reported that they currently smoke. While no survey estimate of smoking prevalence was available for American Indians in Wisconsin, their high rates of death from coronary heart disease may indicate their smoking rates are high.

Table 1. Smoking History of Adults Ages 18-64, by Race/Ethnicity and Sex, Wisconsin 1987-1991

	Total Wisconsin Population			Blacks			Hispanics
Smoking History	Males	Females	Total	Males	Females	Total	Total
Current smoker	30%	28%	29%	51%	34%	41%	35%
Former smoker	27	21	24	13	16	15	22
Never smoked	42	51	47	36	49	44	42
Survey respondents	(2,531)	(2,681)	(5,212)	(70)	(129)	(199)	(85)

Source: Wisconsin Behavioral Risk Factor Surveys, 1987 to 1991. The numbers of Asians and American Indians in the sample were too small to permit estimates.

American Indians. No data specific to Wisconsin is available on the prevalence of smoking among American Indians in the state because sample numbers were too small in the Wisconsin Behavioral Risk Factor Survey to provide estimates. National estimates of smoking prevalence suggest high rates of smoking among Indians as a whole. The high rates of coronary heart disease mortality found among Indians in Wisconsin may indicate high rates of smoking among some Indian populations in the state. Also, a 1986 health status needs assessment survey conducted in six geographic areas of the Wisconsin Winnebago community found that smoking was cited as the health problem of highest priority in five of the six tribal areas surveyed.[12]

African Americans. Estimates for Wisconsin suggest that during the 1987-1991 period, 51 percent of black men and 34 percent of black women were smokers (Table 1). Conversely, about 36 percent of black men and 49 percent of black women reported they had never smoked. Thirteen percent of black men in Wisconsin were former smokers (had quit smoking); the comparable percentage among black women was 16 percent.

Hispanics. According to self-reported information from the 1987-1991 Behavioral Risk Factor Survey, 35 percent of Hispanics in Wisconsin said that they smoke; there were too few Hispanics in the survey to estimate prevalence separately for men and women.

Asians. No information is available on the prevalence of smoking among Asians in Wisconsin.

Programs

Wisconsin has obtained a $6.5 million, 7-year contract to participate in project ASSIST (American Stop Smoking Intervention Study for Cancer Prevention), the federal government's largest project to reduce smoking in the United States. ASSIST Wisconsin is a collaborative effort among the National Cancer Institute, the Wisconsin Division of Health, and the Wisconsin Division of the American Cancer Society. Through earlier ACS research and demonstration projects, knowledge has been gained about keeping children from starting to smoke and helping smokers to quit. ASSIST Wisconsin will build on this "how to," combining it with the interest, commitment, resources, and leadership that already exist in the state.

ASSIST Wisconsin has a strong community focus. Special emphasis is directed toward Milwaukee, which, as the largest metropolitan area of the state, has the highest prevalence of smoking and the highest rates of tobacco-related diseases.[13] Populations targeted for special efforts, either because of high smoking prevalence, high prevention potential, or both, include: women of childbearing age, blue-collar workers, youth, people with lower education levels, and people of color.

The Menominee Tribal Clinic in Keshena received a grant from the Indian Health Service and the federal Centers for Disease Control to study heart disease and its associated risk factors on the Menominee Reservation; the three-year project period is July 1992 through December 1995. (Two Chippewa tribes in Minnesota will also participate in the study.) As part of this effort to assess heart disease and its risk factors among three Indian populations in the Bemidji area, the prevalence of smoking will be assessed, as will coexisting factors that increase the risk of smoking: blood pressure, cholesterol, and diabetes. Study goals include improving the health of participants and adding to the understanding necessary to protect the health of future generations.

The National Cancer Institute, as part of its goal to reduce the 1980 cancer death rate by one-half by the year 2000, has made the reduction of tobacco use by blacks a major priority. NCI is supporting a number of research projects focused on smoking cessation or prevention strategies for black smokers. These projects are being conducted in a wide variety of communities and settings, involving more than one-half million black Americans, and should provide crucial information for advocates and health care workers seeking to help black smokers to quit. The NCI will work with the Center for Disease Control's Office on Smoking and Health to assist communities that are interested in using the materials developed in these projects.[14]

Results of studies already completed suggest that cessation materials designed for blacks should emphasize reasons not to smoke (e.g., for the health of the family or because of the effects of passive smoking), the physical and emotional benefits of quitting, and social and economic reasons to quit. In one survey, blacks were more likely than whites to recognize the harmfulness of passive smoke exposure to young children's health, but less likely to know about tobacco's risks to the smoker's health.[15] Preliminary findings suggest that smoking cessation efforts among blacks are most successful if they use broadcast media that reach black audiences, if they tailor their printed materials to address the needs of black smokers, and if existing networks in black communities are utilized.

Other findings that can help to shape prevention programs include the following: Although black smokers tend to smoke fewer cigarettes per day, they are more likely to smoke cigarettes that have higher tar yields. They also tend to favor menthol cigarettes; the anesthetic effects of menthol additives may enable the smoker to tolerate deeper or more frequent inhalations, resulting in high levels of nicotine inhaled per cigarette.[16] Blacks more often than whites report that they would follow a physician's advice to reduce smoking and other cancer risks, but blacks receive this kind of advice less often.[17] Health care professionals may be instrumental in encouraging and assisting smokers to quit.

Participants at a workshop on smoking education among minorities suggested that many blacks may not know about the cycle of quitting (that it often takes many attempts and relapses before quitting is successful), the effects of nicotine (e.g., its addictive properties), the occurrence of relapse, and places to go for help.[18] Another factor believed important by workshop participants is the high degree of stress in the black community, and that smoking is widely considered to be relaxing.[19] [20] One study found that African Americans living in urban communities with large African-American populations are at especially high risk for smoking-related illness; aggressive marketing by tobacco companies in these neighborhoods may be a contributing factor.[21]

Obesity

A conference conducted by the National Institutes of Health in 1985 defined obesity as "an excess of body fat frequently resulting in a significant impairment of health," and concluded that "an increase in body weight of 20 percent or more above desirable body weight constitutes an established health hazard." The conference also noted that lower levels of overweight could also be detrimental, especially in the presence of diabetes, hypertension, heart disease, or other existing risks. Obesity refers specifically to an excess of body fat, and overweight is a more general measure that refers to excessive weight for height.

Data from the National Health and Nutrition Examination Surveys (NHANES) showed a strong association between the prevalence of obesity and several cardiovascular disease risk factors: hypertension, high cholesterol levels, and non-insulin-dependent diabetes. Obesity also increased the risk for coronary artery disease (the primary cause of heart attacks), independent of the other risk factors. A clear relation has also been found between obesity and cancer. Obese males, regardless of smoking habits, had a higher mortality rate from cancer of the colon, rectum, and prostate. Obese females had a higher mortality rate from cancer of the gallbladder, biliary passages, breast (postmenopausal), uterus (both cervix and endometrium), and ovaries.[22]

Americans are "among the most obese populations in the world," with estimates of prevalence ranging from about 20 percent to 50 percent of all adults, depending on specific definitions.[23] As a consequence, Americans bear a heavy burden of obesity-related diseases. There are major differences in behavioral patterns between the U.S. population and many others that have a lower obesity prevalence. In particular, the U.S. diet is characterized by "low total-calorie intake, high fat intake, high refined-sugar intake, high palatability, high variety, and low relative cost."[24] Americans are also "singularly sedentary" because of the elimination of physical labor from most jobs and the widespread availability and affordability of motorized transportation.

Obesity in minority populations in the United States is part of this overall theme. The prevalence of obesity in minority groups is generally high. Minorities have shared the trend toward greater obesity prevalence and tend to have higher rates of obesity-related diseases, such as hypertension and diabetes, than does the general population.

Low socioeconomic status is associated with higher obesity rates, particularly in women. It is also associated with less health knowledge, a lower likelihood of being exposed to health education curricula in schools, and less access to medical care, including obesity counseling.[25] Limited financial resources and geographic factors also limit the ability of many who live in poverty to make diet and recreational choices that are health promoting.

National Findings

An excess prevalence of overweight, particularly among females, has been reported in most minority populations in the United States.[26] According to self-reported data on weight and height from the National Health Interview Survey, the national prevalence of overweight in 1990 was 26 percent among males and 26 percent among females.[27] Results of the same survey indicated that the prevalence of overweight among black males in 1990 was 32 percent, and among black females it was 40 percent.[28]

The 1982-1984 Hispanic Health and Nutrition Examination Survey found the prevalence of overweight to be 31 percent among Mexican-American men and 42 percent among Mexican-American women.[29] Within the Hispanic American population, the prevalence of obesity was higher among Mexican Americans than among Cuban Americans or Puerto Ricans. Among Mexican Americans, prevalence rates were higher in women than in men and higher among lower-income individuals than among high-income people.[30]

Based on results of the Survey of American Indians and Alaska Natives (commissioned by the Indian Health Service), the 1987 estimated prevalence of overweight in American Indian men aged 18 and over was 34 percent (compared to 24 percent among all U.S. males); the prevalence among American Indian women was 40 percent (compared to 25 percent among all U.S. women).

Obesity is an important problem for many American Indian tribes. "Although American Indians/Alaska Natives are not a homogeneous group with regard to health problems, they have all suffered adverse effects from the high prevalence of obesity.[31] Obesity has become a major health problem in AI/ANs only in the past one or two generations...related to the relative abundance of high-fat, low-fiber foods accompanied by rapid changes from an active to a sedentary lifestyle... most Indian populations developed obesity in less than a generation." Along with the increased prevalence of obesity that has occurred over the past 30 years, there has been an epidemic of diabetes and other chronic diseases... Because the prevalence of smoking, hypertension, diabetes, and hypercholesterolemia [high cholesterol] varies greatly among tribal groups, the health implications of obesity also vary greatly and reflect the coexistence of other risk factors."[32]

Wisconsin Findings

Overview. Based on self-reported weight and height survey data for 1987-1991, an estimated 27 percent of all adults in Wisconsin are overweight (29 percent of males and 25 percent of females). According to survey results, blacks in Wisconsin have a higher prevalence of overweight than does the population of the state as a whole. While survey results suggest that the prevalence of overweight among Hispanics in Wisconsin is similar to that for the total population, this finding is based on small numbers and differs from national data. Information about deaths and hospitalizations for diabetes provide an indication that obesity may be a particular problem among some Indian communities in Wisconsin.

American Indians. Owing to their small numbers in the sample, no Behavioral Risk Factor Survey estimates about overweight prevalence can be made for American Indians in Wisconsin. Still, the high rates of obesity found in many tribes nationally and the clear contribution of obesity to diabetes and other chronic diseases may indicate a reason for concern here in Wisconsin. In 1987-1991, American Indians in Wisconsin had an age-adjusted rate of death from diabetes that was over three times the rate found in the total population.

African Americans. Wisconsin data on the prevalence of overweight in the population confirms national findings that obesity is a particular problem in some minority populations. According to Wisconsin Behavioral Risk Factor Survey results for 1987-1991, 37 percent of black males and 42 percent of black females aged 18-64 were overweight (120 percent or more of the weight-for-height associated with lowest mortality). Diabetes-associated mortality rates and hospitalization rates are higher among African Americans in Wisconsin than among the state population as a whole.

Hispanics. According to 1987-1991 data from the Behavioral Risk Factor Survey, 28 percent of Hispanics in Wisconsin were overweight. This estimate is lower than the prevalence of overweight found nationally among Hispanics. Comparatively high rates of obesity among some Hispanic populations in the United States contribute to their higher rates of diabetes.[33] Wisconsin data show that Hispanics have a higher rate of hospitalization for diabetes than does the general population.

Asians. No estimate of overweight prevalence can be made for Asians in Wisconsin, owing to their small numbers in the Behavioral Risk Factor Survey.

Programs

Programs to prevent diabetes and other adverse health effects of overweight should take into account the particular strengths of each community. For example, a review article about obesity in American Indians concluded that "the best approach to preventing obesity and its consequences among Indians is to rediscover and promote at all levels traditional values and ways that protected native peoples in previous generations against chronic diseases. Model programs, such as the Zuni Wellness Program, should be replicated in other AI/AN [American Indian/Alaskan Native] communities to stop the increase of obesity and its effects. The goals should be to have a more balanced low-fat, high-fiber diet that is similar to the traditional diet of AI/ANs and to increase activity levels in the community."[34]

The Zuni Indians in New Mexico have high rates of overweight and associated diabetes; since 1985, exercise and weight control programs among tribal members have been sustained with the leadership and support of 15-20 Zuni volunteers trained in exercise and group leadership. Aerobic exercise sessions are offered five days a week, several times daily, at a variety of sites in the Zuni community. In addition, foot races and other exercise-oriented events are offered throughout the year, sponsored by community agencies and local businesses. These efforts have demonstrated that a community-based exercise and weight-control program can promote weight loss in populations whose obesity prevalence constitutes a major health risk.[35]

Family and community-based interventions need to be developed to encourage lifelong healthy eating and to make regular physical activity a routine part of a healthy life for all.[36]

Alcohol Abuse

Alcohol abuse and dependence are serious problems that affect about 10 percent of adult Americans.[37] Adverse social and medical consequences of abusive drinking arise as a result of single bouts of drinking as well as from longer term effects of alcohol consumption. A minimum of 3 percent of all deaths in the United States can be attributed to alcohol-related causes, including automobile crashes, liver disease, esophageal and mouth cancer, and homicide. Alcohol abuse also contributes to domestic violence, unemployment and underemployment, and other negative effects on family and community life.

Alcohol abuse involves persistent patterns of heavy alcohol intake associated with health consequences and/or impairment in social functioning. Alcohol dependence is differentiated from alcohol abuse on the basis of such manifestations as craving, tolerance, and physical dependence that result in changes in the prominence of drinking in one's life and in an impaired ability to exercise restraint over drinking. Both alcohol abuse and dependence arise as a result of different complex and as yet incompletely understood processes. It is known, however, that the interaction of genetic factors with psychological and social factors is implicated in the cause of alcohol dependence, which, like coronary artery disease, diabetes, and hypertension, is a biologically based disease in which genetic predisposition interacts with environmental factors.[38]

The overall negative impact of alcohol abuse may be experienced more severely among many minority groups, owing to such coexisting factors as unemployment, adverse living conditions, poor health care, and racial discrimination. Unfortunately, few studies of the prevalence of alcohol problems have involved systematic comparisons across ethnic minority groups or examined the many factors that can affect the likelihood of experiencing such problems. These factors include nutritional or health status, socioeconomic status, education, employment status, income, and housing conditions.[39]

National Findings

A national survey in 1984 found that black men had somewhat higher abstention rates than whites, and white men were somewhat more likely to be heavier drinkers. The same pattern was found for women, but the differences were more pronounced. The 1985 National Health Interview Survey also found higher rates of abstention and lower rates of drinking at all levels for black men and women than for whites.[40]

Black and white men had strikingly different patterns in the relationship between age and drinking problems. White men were shown to be at the highest risk for alcohol use problems in the youngest age group (18-29), and black men were at the lowest risk in this age group. For men in their thirties, problem rates decreased sharply for whites but increased sharply for blacks. Problem rates remained higher for blacks than for whites throughout middle and old age.

Blacks, especially males, are at extremely high risk for acute and chronic alcohol-related diseases such as cirrhosis, alcoholic fatty liver, hepatitis, heart disease, and cancers of the mouth, larynx, tongue, esophagus, and lung, as well as for unintentional injuries and homicide. One possible explanation for the high level of alcohol-related health problems among blacks may be the later onset of heavy drinking. This late onset may be associated with more sustained patterns of high consumption, in contrast to patterns among whites, for whom heavy drinking is more likely to be a short-term, youthful phenomenon. Research suggests that socioeconomic factors were more strongly related to drinking problems among black men than among white men. Poor education, poverty, and heavy consumption patterns were associated with both dependence problems and interpersonal problems among blacks. In contrast, only consumption patterns--but not education or income--were found to be statistically related to these problems among whites.[41]

Thus, although alcohol consumption levels appear to be similar for black and white men, black men experience considerably higher rates of all kinds of alcohol-related social and health complications than do white men, and high problem rates are concentrated among the more socioeconomically disadvantaged men. These findings suggest that the higher vulnerability of blacks to alcohol problems may be largely a reflection of social and economic problems such as unemployment, adverse living conditions, poor health care, and racial discrimination.[42]

A representative national survey of Hispanics in 1984 revealed striking differences in alcohol consumption between Hispanic men and women.[43] More than 70 percent of Hispanic women drank either less than once a month or not at all; in contrast, almost the same percent of men were drinkers. As with black men, rates of heavier drinking increased sharply among Hispanic men in their thirties, but declined thereafter. Mexican-American men and women had much higher rates of both abstention and heavier drinking than men and women of Puerto Rican or Cuban origin. Research suggests that more highly acculturated men were more likely to be drinkers and to drink heavily, and that their drinking patterns were closer to those of the U.S. general population. The acculturation relationship was similar but more pronounced among women.

About 18 percent of Hispanic men and 6 percent of Hispanic women experienced at least one alcohol-related problem during the year preceding the 1984 survey. Problem rates varied by national origin; much higher proportions of Mexican-American men and women reported drinking-related problems, compared with Puerto Ricans and Cubans. The prevalence of alcohol-related problems has been found to be higher among Hispanic men than among black or white men.[44]

Asian Americans as a whole have the lowest level of alcohol consumption and alcohol-related problems of all the major racial and ethnic groups in the United States. This low rate of alcohol consumption and abuse may be attributed partly to cultural factors and partly to the flushing response, which occurs in a high proportion of Asian people. This physiological reaction is characterized by facial flushing, which is often accompanied by headaches, dizziness, rapid heart rate, itching, or other symptoms of discomfort. A 1987 study concluded that Asian-Americans are more likely to be abstainers than other racial groups, although the frequency and amount of drinking appeared to be increasing. Patterns of alcohol use among Asian-Americans vary by such factors as specific ethnic group, place of birth, generational status, and degree of acculturation.[45]

Because of the great diversity in drinking practices among American Indian tribal groups, it is not possible to make generalizations about their drinking patterns. Some tribes are mostly abstinent, while others have high levels of alcohol use and abuse. The extent of alcohol-related problems among American Indians nationally is reflected in high rates of mortality from such alcohol-related causes of death as unintentional injuries, chronic liver disease and cirrhosis, homicide, and suicide. Indian Health Service data suggest that deaths from alcohol-related causes are particularly prevalent among American Indians between the ages of 25 and 44.[46]

Wisconsin Findings

Overview. Household survey data provide self-reported information about several measures of alcohol-related risk in the Wisconsin population: "chronic drinking" (60 or more drinks in a month), "episodic drinking" (five or more drinks on an occasion), and "drinking and driving" (driving after having too much to drink). By all these measures, rates of alcohol use are lower among blacks of both sexes in Wisconsin, compared with the population as a whole (Table 2). Hispanics (both sexes combined) report a lower rate of alcohol use than does the total population, but similar rates of episodic drinking and "drinking and driving."

Table 2. Alcohol Use and Alcohol Risk Factors Among Adults Aged 18-64, By Race/Ethnicity and Sex, Wisconsin 1987-1991

Alcohol Use and Risk Factors	Total Wisconsin Population			Blacks			Hispanics
	Males	Females	Total	Males	Females	Total	Total
Uses alcohol	81%	69%	75%	68%	40%	51%	63%
Chronic drinking*	13	3	8	7	1	4	10
Episodic drinking**	45	19	32	34	8	18	33
Drinking and driving***	13	4	8	8	1	4	8
Survey respondents	(2,531)	(2,681)	(5,212)	(70)	(129)	(199)	(85)

Source: Wisconsin Behavioral Risk Factor Surveys, 1987 to 1991. The numbers of Asians and American Indians in the sample were too small to permit estimates.

* Respondents reported an average of 60 or more alcoholic drinks a month.

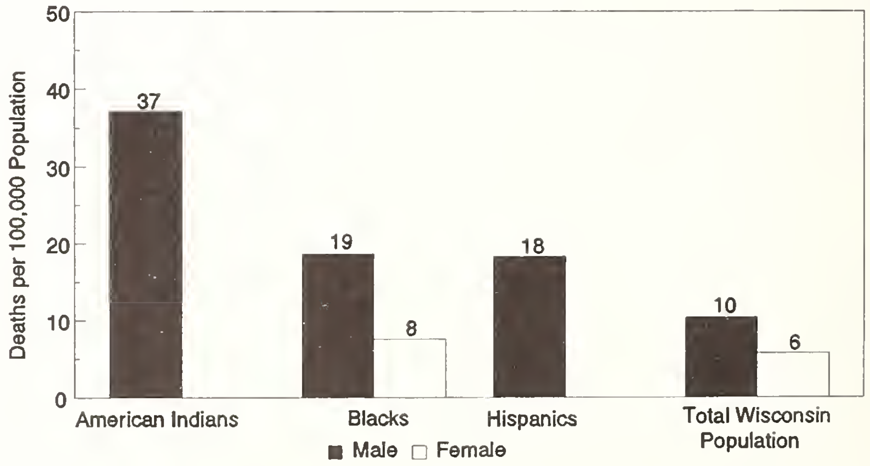
** Respondents reported having five or more drinks on an occasion, one or more times in the past month.

*** Respondents reported having driven after having too much to drink, one or more times in the past month.

No direct estimates of alcohol use among American Indians can be provided, since the number of Indians in the sample of the Behavioral Risk Factor Survey is too small even when five years of data are combined.

In 1987-1991, age-adjusted mortality rates from chronic liver disease and cirrhosis were higher among American Indian males, Hispanic males, and blacks of both sexes, compared to rates in the total state population (Figure 1). Rates of hospitalization for alcohol and other drug abuse were also higher among blacks and American Indians in Wisconsin, compared with the state population as a whole.

Figure 1. Age-Adjusted Rates of Death from Chronic Liver Disease and Cirrhosis by Race/Ethnicity and Sex, Wisconsin, 1987-1991



Note: Based on deaths at all ages attributed to chronic liver disease and cirrhosis (ICD-9 code 571). There were no deaths from this cause recorded among Hispanic females or Asians; and too few among American Indian females to present a rate. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

American Indians. Patterns of alcohol use among American Indians vary considerably by tribe, so no conclusion can be drawn from national data about alcohol use among American Indians in Wisconsin. However, death and hospitalization data can provide an indirect indication.

Although the annual number of deaths attributed to chronic liver disease and cirrhosis (ICD-9 code 571) among American Indians in Wisconsin is small (an average of 7 deaths per year in 1987-1991), the age-adjusted rate of mortality from this cause was higher among Indians than among any other population group in the state. The overall age-adjusted mortality rate among American Indians was 32 deaths per 100,000 population, or four times the expected rate based on deaths in the total population. The age-specific mortality rate for chronic liver disease and cirrhosis for American Indians aged 45-64 was 79 per 100,000 population, a rate very similar to that found nationally in 1988 for American Indians aged 45-64 (77 per 100,000).[47]

Hospitalization data provide another indicator of alcohol use in a population. In 1990-1992, the age-adjusted hospitalization rate among American Indians for alcohol and other drug abuse (AODA) problems was 120 hospitalizations per 10,000 population, or 2.6 times the expected rate. Age-specific rates of AODA hospitalizations were 191 per 10,000 among American Indians aged 18-44 (2.4 times the rate for all persons aged 18-44), and 138 per 10,000 among Indians aged 45-64 (3.2 times the rate for all persons aged 45-64).

Age-specific hospitalization rates for AODA differed by sex. Among American Indian men aged 18-44, the rate of AODA hospitalizations was 228 per 10,000 population; among American Indian women in this age group, the rate was 156 per 10,000. In the age group 45-64, the rate of AODA hospitalizations was 237 per 10,000 among American Indian men and 46 per 10,000 among American Indian women.

African Americans. Data from the 1987-1991 Behavioral Risk Factor Surveys suggest that black males aged 18-64 have lower levels of alcohol use than males as a whole in this age group in Wisconsin. A lower percentage of black men reported having had any alcoholic drinks in the month preceding the survey (68 percent vs. 81 percent); thus by this measure the rate of abstaining from alcohol is higher among black men. Black men also were less likely to report chronic drinking (7 vs. 13 percent), episodic or "binge" drinking (34 percent vs. 45 percent), and drinking and driving (8 percent vs. 13 percent).

Similar differences were found among black women aged 18-64 compared with all women in this age group. Specifically, 40 percent of black women said they had had at least one drink during the month preceding the survey, compared with 69 percent of all women aged 18-64. Similarly, lower percentages of black women than all women reported episodic drinking (8 percent vs. 19 percent), and drinking and driving (1 percent vs. 4 percent). (The difference in the chronic drinking measure was not statistically significant.)

As was found nationally, these comparatively low rates of alcohol use among the black population of Wisconsin are in contrast to their high rates of alcohol-related deaths. Death certificate data indicate that blacks in Wisconsin are more likely to die from alcohol-related causes, compared with the population as a whole. The age-adjusted mortality rate among blacks for chronic liver disease and cirrhosis (ICD-9 code 571) is higher among blacks than among the general population of Wisconsin. The age-adjusted rate of death from this disorder in 1987-1991 was 19 per 100,000 population among black men, 8 per 100,000 among black women, for an overall rate of 13 per 100,000 among all blacks in the state. The rate among black men was 1.8 times the expected rate; among black women, the rate was 1.3 times the expected rate.

Hospitalizations for alcohol and other drug abuse (AODA) occur at a markedly higher rate among blacks than among the general population. The age-adjusted rate of AODA hospitalizations among blacks for 1990-1992 was 160 hospitalizations per 10,000 population, or about 3.4 times the expected rate. Black males aged 18-44 had the highest rate of AODA hospitalizations of any group (454 per 10,000 population), or 4 times the rate for all males 18-44. The AODA hospitalization rate among black women aged 18-44 was 197 per 10,000 population, also 4 times the rate for all females in the age group. Blacks aged 45-64 experienced AODA hospitalizations less frequently (225 per 10,000 among males and 42 per 10,000 among females), although still more often than the total population aged 45-64. The higher rates of alcohol-related problems among blacks appear to reflect many poverty-associated factors rather than higher rates of drinking.

Hispanics. Although no differences by sex can be estimated for Hispanics from the Behavioral Risk Factor Survey, the results for 1987-1991 suggest that Hispanics as a whole present a somewhat different picture of alcohol use than do all Wisconsin adults. A lower percentage of Hispanics stated they had at least one drink during the month before the survey (63 percent vs. 75 percent), implying a higher proportion abstaining from alcohol. Hispanics and all adults were similar in the proportions who reported episodic drinking (33 percent and 32 percent), and drinking and driving (8 percent each). (The difference in rates of "chronic" drinking was not statistically significant.)

During the period 1987-1991, all of the deaths attributed to chronic liver disease and cirrhosis among Hispanics occurred among men. The death rate from this cause among Hispanic men (18 per 100,000) was 1.8 times the expected rate based on the rate for all men in the population.

Hospitalizations for treatment of alcohol and other drug abuse (AODA) in 1990-1992 occurred at a lower rate in the Hispanic population of Wisconsin (41 per 10,000 population) than in the population as a whole (47 per 10,000). However, this moderate overall rate combines higher rates among Hispanic men and low rates among Hispanic women. Age-specific rates of AODA hospitalizations among Hispanic men were 109 per 10,000 among men aged 18-44, and 60 per 10,000 among Hispanic men aged 45-64. Comparable rates among Hispanic women were 31 per 10,000 among Hispanic women aged 18-44 and 13 per 10,000 among Hispanic women aged 45-64.

Programs

Many community programs exist in Wisconsin to assist people in their efforts to stop abusing alcohol. One example is the American Indian Council in Milwaukee. The American Indian Council on alcoholism is a special program that provides services for Indian people in and around the Milwaukee area. The services are culturally oriented, with the focus on Indians and their families. Services offered include alcoholism counseling, weekly Brotherhood (AA) meetings, and other social and traditional activities to promote recovery from the disease of alcoholism. Activities include community education efforts; a drop-in center; youth services that provide a variety of social and recreational activities; and family services that seek to promote family unity, including family counseling and bi-monthly visits to correctional residents/inmates to aid them in rehabilitation efforts.

AODA services are also available at the Milwaukee Indian Health Centers of the Milwaukee Indian Health Board, Inc. The Milwaukee Indian Health Centers serve a multicultural population with a full range of health services, including medical and dental primary care, social services, perinatal case management, AODA counseling, job training, and a wide variety of other services. Users reflect the racial and economic demographics of the immediate community and include 56 percent African American, 18 percent American Indian, 16 percent Caucasian, 7 percent Hispanic, and 3 percent Asian/Pacific. Most users are extremely poor; 86 percent live at or below federal poverty levels and are uninsured or underinsured.

Since 1972, the Wisconsin Winnebago Health Authority has administered an AODA outpatient program targeted to American Indian adults, elders, and adolescents. Outpatient services offered include: individual counseling, group counseling, classes and assessments for persons who drink and drive, adolescent aftercare, relapse care, a newsletter, information and referral, outreach, and crisis intervention.

Related efforts of the Winnebago Health Authority include community education activities and the Robert L. Funmaker, Sr., Foster Treatment Home. Six satellite offices provide AODA services in Black River Falls, Wisconsin Dells, Tomah, LaCrosse, Wittenburg, and Wisconsin Rapids.

The Maehnowesekiyah Treatment Center of the Menominee Indian Tribe provides full services in alcohol and other drug abuse (AODA) therapy, including group, individual, and family services. Both residential and outpatient treatment are offered. Examples of services include family retreats, an adolescent health care support group, a women's special needs program offered to pregnant women and mothers who abuse alcohol or are involved in a relationship with an alcoholic, and in-home treatment for individuals and their families.

Hypertension

Hypertension (high blood pressure) is the major risk factor for stroke (cerebrovascular disease), and also increases the risk of heart disease. It is one of the three major causes of end-stage renal disease (kidney failure).[48] In addition to presenting these serious risks for chronic disease, hypertension and its effects complicate pregnancy and can lead to preterm delivery, low birthweight, intrauterine growth retardation, premature birth, and perinatal mortality.[49]

Environmental influences that may affect hypertension prevalence include social stress and instability, coping styles, education, unemployment, and underemployment. Other factors are the "influences that lead to behavioral risk factors such as poor diet, smoking, excessive alcohol intake, and inadequate physical activity." Much research remains to be done since the causes of hypertension in various populations is poorly understood; also unknown are the ways in which environmental factors may combine with genetic factors to produce a higher risk of hypertension. Nevertheless, several risk factors that can be modified have been identified: obesity, salt intake in susceptible persons, alcohol, and lack of exercise. Addressing these factors will contribute to the primary prevention of hypertension in a population.[50]

National Findings

In the United States, hypertension-related morbidity and mortality occur three to five times more frequently among blacks than among whites. Stroke, end-stage renal disease, congestive heart failure, and left ventricular hypertrophy (enlargement of the heart that impairs its ability to pump oxygenated blood) occur much more frequently in African-Americans than in U.S. Caucasians.[51] Hypertension differences also contribute to the discrepancy between blacks and whites in coronary heart disease mortality, especially among women.

Studies suggest that black hypertensives may be at greater risk of stroke than white hypertensives; part of this difference could be due to treatment differences after the hypertension is diagnosed.[52] More research will be required to better understand the causes and mechanisms of hypertension. Just as important, however, is finding ways "to better reach and serve the African-American community by creating and maintaining hypertension control programs." [53]

Two national surveys that included measurement of blood pressure found that the age-adjusted prevalence of hypertension was much lower among Hispanic persons and much higher among non-Hispanic black persons than among non-Hispanic white persons.[54] Non-Hispanic black males had a 23 percent higher prevalence of hypertension than non-Hispanic white males. Hypertension estimates for Cuban and Puerto Rican males were about 40 percent lower and for Mexican American males about 30 percent lower than for non-Hispanic white males.

The prevalence of hypertension among non-Hispanic black females was 1.7 times the prevalence among non-Hispanic white females. Hispanic females had lower prevalence estimates of hypertension compared with non-Hispanic white females, although the differences by ethnicity were not as large as among males. Cuban females had the lowest prevalence, 14 percent.[55]

A study of American Indians in Minneapolis found that their blood pressures were similar to those of U.S. whites;[56] however, Indian Health Service data suggests that Indians in the Bemidji region (Wisconsin, Minnesota, Michigan) have the highest age-adjusted mortality from cerebrovascular disease of any IHS region.[57]

Wisconsin Findings

Data for the years 1987-1991 from the Behavioral Risk Factor Survey provide some confirmation that hypertension is a particular problem for blacks in Wisconsin. Sixteen percent of black males aged 18-64 had been told more than once by a doctor that their blood pressure was high; this compares with 13 percent of all males in the state (the difference was not statistically significant, however). There was a marked difference among women: 22 percent of black women aged 18-64 had been told more than once that their blood pressure was high, compared with 10 percent of all women.[a]

The prevalence of hypertension among various racial and ethnic groups in Wisconsin can also be inferred from mortality rates for stroke and coronary heart disease. Wisconsin death certificate data indicate higher rates of death from stroke among blacks of both sexes, compared with the population as a whole. American Indian men in Wisconsin also appear to have a higher rate of stroke death. Hispanics overall appeared to have a stroke death rate lower than that of the total state population. American Indians in Wisconsin had the highest overall age-adjusted rate of death from coronary heart disease; the death rate from coronary heart disease among blacks was also markedly higher than for the total population. Hispanics apparently died from coronary heart disease at a markedly lower rate than the total population.

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[a] Of course, self-reported data on disease prevalence reflect more than prevalence; they are confounded by such factors as help-seeking behavior and access to medical care. Prevalence is underestimated to the extent that conditions in a given population are undiagnosed.

LEADING CAUSES OF MORTALITY AND MORBIDITY (CHRONIC DISEASE)

HEART DISEASE

CANCER

STROKE

DIABETES

Heart Disease

Heart disease remains the leading cause of death for all racial/ethnic groups in the United States, and also is a leading cause of disability. The major preventable form of heart disease in the United States and other developed countries is coronary heart disease (ischemic heart disease). Coronary heart disease most commonly occurs as a result of impeded blood flow to and through the heart, usually because of a degenerative process that narrows or blocks arteries in the heart. Deposits of fat, cholesterol, and other substances accumulate within the arterial walls, decreasing the ability of arteries to expand and contract. Blood moves with increasing difficulty through the narrowed artery channels, making it easier for a clot to form that will block the channel and deprive the heart (or brain) of blood. When the blockage occurs in a coronary artery, the result is a heart attack. (When the blockage is in the brain, the result is a stroke.)

The changes in arteries that result in heart disease can begin during the teenage years; and the most rapid, though still silent, progression of the disease often occurs during a person's twenties. Early identification of risk factors--especially high blood pressure, high blood cholesterol, and smoking--can help prevent or slow artery narrowing, and prevent the heart attack or stroke that may result.

Before age 65, heart disease mortality rates are markedly higher among men than among women. In all racial and ethnic groups, heart disease mortality increases with age.

National Findings

Based on 1988 data, the heart disease death rate for adults 25-44 years old was highest among blacks, about 2.6 times the rate among whites. Compared with white adults, the national rate for American Indians was similar, while the rates for Hispanic and Asian adults were about 30 percent and 60 percent lower, respectively.[58]

Wisconsin Findings

Overview. Findings for the total Wisconsin population for 1987-1991 illustrate that the rate of death from coronary heart disease is generally higher among men, with the difference especially pronounced before the age of 65 (Table 3).

Table 3. Rates of Death from Coronary Heart Disease Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	244	11	243	1,764
Females	211	3	73	1,274
Total	227	7	156	1,472

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Includes all deaths from this cause, regardless of age. Rates are the number of deaths per 100,000 population in the age and sex group.

Death certificate information for 1987-1991 reveals that American Indians in Wisconsin had the highest overall age-adjusted rate of death from coronary heart disease (295 per 100,000 population); the death rate among blacks (242) was also markedly higher than for the total population (227) (Table 4). Hispanics died from CHD at a strikingly lower rate (94 per 100,000 population); the rate was even lower among Asians (64 per 100,000).

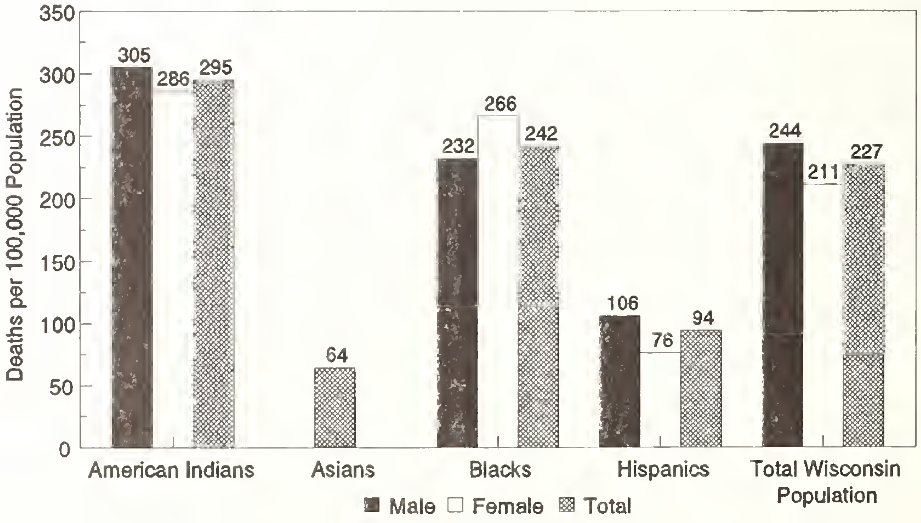
Table 4. Rates of Death from Coronary Heart Disease,* By Race or Ethnicity, Wisconsin 1987-1991

	Total Rate**	Rate 18-44	Rate 45-64
Total Wisconsin Population	227	7	156
American Indians	295	***	257
Asians	64	***	***
Blacks	242	9	191
Hispanics	94	***	73

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Number of deaths per 100,000 population, based on deaths attributed to coronary heart disease (ICD-9 codes 410-414).
** Total rates are age-adjusted to the 1990 Wisconsin population. Includes deaths at all ages.
*** Fewer than 20 deaths during the 5-year period; no rate calculated.

In the Wisconsin population as a whole, males had a higher rate of death from coronary heart disease. This pattern varied by racial/ethnic group, however, reflecting high rates of death from this cause among American Indian and African American women (Figure 2).

Figure 2. Age-Adjusted Rates of Death from Coronary Heart Disease by Race/Ethnicity and Sex, Wisconsin, 1987-1991



Note: Based on deaths at all ages attributed to coronary heart disease (ICD-9codes 410-414).
There were too few deaths among Asians to calculate sex-specific rates.
Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for HealthStatistics.

In 1990-1992, blacks in Wisconsin were hospitalized with a diagnosis of coronary heart disease at a higher age-adjusted rate (77 per 10,000 population) than the statewide rate (67 per 10,000) (Table 5). Asian Americans were hospitalized with this diagnosis at a markedly lower rate, 16 per 10,000. The remaining population groups had roughly equivalent age-adjusted hospitalization rates: 54 per 10,000 among American Indians, 56 per 10,000 among Hispanics, and 56 per 10,000 among white non-Hispanics.

Heart disease hospitalization rates were comparatively low among all young adults (aged 18-44), who were hospitalized with a principal diagnosis of coronary heart disease at an age-specific rate of 8 hospitalizations per 10,000 population. In this age group, the hospitalization rate was 8 per 10,000 among American Indians, 12 per 10,000 among blacks, 5 per 10,000 among Hispanics, and 7 per 10,000 among whites. Hospitalization rates for coronary heart disease were sharply higher among adults aged 45-64: 136 per 10,000 for the age group as a whole, and 97 per 10,000 among American Indians, 32 per 10,000 among Asians, 146 per 10,000 among blacks, 99 per 10,000 among Hispanics, and 112 per 10,000 among whites.

Table 5. Rates of Hospitalization for Coronary Heart Disease,* By Race or Ethnicity, Wisconsin 1990-1992

	Total Rate**	Rate 18-44	Rate 45-64
Total Wisconsin Population	67	8	136
American Indians	54	8	97
Asians	16	***	32
Blacks	77	12	146
Hispanics	56	7	99

Source: Wisconsin death certificates (resident data), Center for Health Statistics

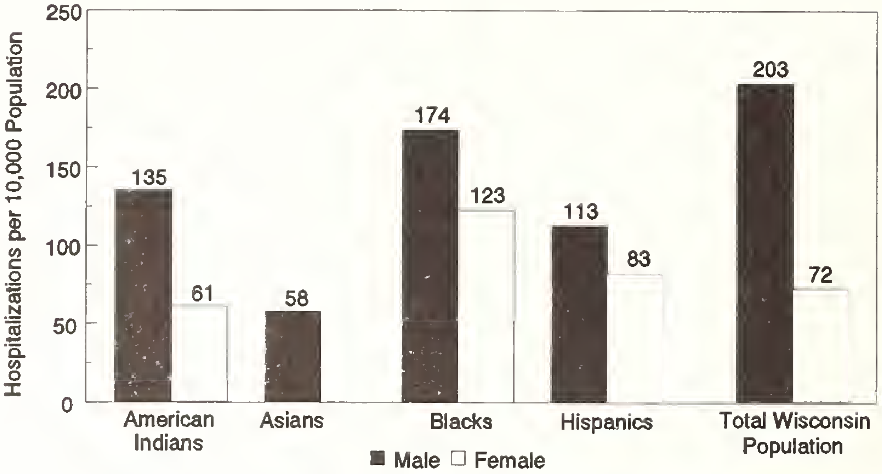
* Number of hospitalizations per 10,000 population, based on hospitalizations in which coronary heart disease (ICD-9-CM codes 410-414) was cited as the principal diagnosis at discharge.

** Total rate is age-adjusted. Includes all ages.

*** Fewer than 20 hospitalizations during the seven quarters of data examined; no rate calculated.

Hospitalization rates for heart disease vary markedly by sex, especially before age 65. For males aged 45-64, the hospitalization rate for coronary heart disease was 203 hospitalizations per 10,000 persons; the comparable rate among women was 72 (Figure 3). This difference by sex was found for every racial\ethnic group, although the high rate of hospitalizations for coronary heart disease among black and Hispanic women made the difference less striking in those groups.

Figure 3. Rates of Hospitalization for Coronary Heart Disease Among Persons Aged 45-64, By Race/Ethnicity and Sex, Wisconsin, 1990-1992



Note: Based on a principal diagnosis at discharge of coronary heart disease (ICD-9-CM 410-414); too few hospitalizations for this diagnosis occurred among Asian females to calculate a rate. Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

American Indians. American Indians in Wisconsin had the highest age-adjusted rate of death from coronary heart disease of any racial/ethnic group in the state (295 per 100,000), about 1.3 times the expected rate given the rate in the total population. The age-adjusted death rate from coronary heart disease among American Indian males was 305 per 100,000; among American Indian females, the rate was 286 per 100,000 (Table 6).

Table 6. CHD Death Rates Among American Indians, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	305	**	409	1,544
Females	286	**	**	1,249
Total	295	**	257	1,375

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

American Indians aged 45-64 also had the highest age-specific rate of death from coronary heart disease (257 per 100,000), about 1.6 times the total rate for the age group. American Indian men aged 45-64 died from coronary heart disease at the rate of 409 per 100,000 population, or 1.7 times the rate for all males aged 45-64. The number of deaths from heart disease among American Indian women in this age group was too small to permit reporting a rate.

Regional data reported by the Indian Health Service show that Indians in the Bemidji IHS Area (comprising Wisconsin, Minnesota, and Michigan) have one of the two highest mortality rates from heart disease (all forms) of all IHS Areas. The age-adjusted mortality rate for heart disease among Indians in the Bemidji area was 268 per 100,000 (1986-1988 data).[59]

Heart disease hospitalization data for American Indians in Wisconsin do not reflect their high rates of death from heart disease. Based on hospital data for 1990-1992, the total age-adjusted hospitalization rate for coronary heart disease among American Indians in Wisconsin was 56 per 10,000, lower than the rate for the statewide population (67).

American Indian men aged 45-64 were hospitalized for coronary heart disease at a rate of 135 per 10,000; the rate among American Indian women was 61. The male-to-female ratio for coronary heart disease hospitalizations in this age group was thus 2.2 (lower than the statewide ratio of 2.8). Among American Indians, the heart disease hospitalization rate is lower among men but slightly higher among women than the comparable rates for all races.

The high rates of death from coronary heart disease among American Indians are surprising given their hospitalization rate for this diagnostic category, which was lower than the all-races rate. It may be that Indians with heart disease are less likely to be hospitalized; it may be they have a higher rate of sudden death (fatal heart attack), or it may be that Indian race is underreported on the hospital billing form used to extract hospitalization data. (Note also the similar finding for cancer deaths and hospitalizations among Indians--lower hospitalization rates, higher death rates than the comparable rates for all races.)

***Asians*.** In 1987-1991, the overall age-adjusted rate of death from coronary heart disease among Asians in Wisconsin was 64 per 100,000, about 28 percent of the rate in the total population. There were too few deaths to present separate rates for males and females, or within age groups.

During 1990-1992, the age-adjusted hospitalization rate for coronary heart disease among Asians was 16 per 10,000, markedly lower than the rate for the state as a whole (67). The rate of hospitalizations for coronary heart disease was 58 per 10,000 among Asian males aged 45-64; no age-specific hospitalization rate was calculated for females owing to the small number of hospitalizations for this diagnosis.

***African Americans*.** Blacks in Wisconsin died at a higher rate from coronary heart disease than did the population as a whole. The overall age-adjusted mortality rate from coronary heart disease among blacks was 242 per 100,000 population, about 1.1 times the expected rate based on the total population (Table 7). Examining the age-adjusted data by sex, it appears that the overall mortality discrepancy for heart disease among blacks reflects higher mortality in the female population. Black males died at an overall rate somewhat lower than that for all males in the state (232 vs. 244 per 100,000), but black females died at a markedly higher rate than the total female population in Wisconsin (266 vs. 211 per 100,000).

Table 7. CHD Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	232	13	281	1,236
Females	266	**	118	1,167
Total	242	9	191	1,195

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Age-specific death rates suggest that blacks are at special risk of premature death from heart disease, defined as deaths occurring before age 65. Among blacks aged 18-44, the age-specific rate of death attributed to coronary heart disease was 9 per 100,000, a rate that was 1.3 times the rate for the age group as a whole (7). The death rate among blacks aged 45-64 (191 per 100,000) was about 1.2 times the total rate for the age group. The heart disease mortality rate among black males aged 45-64 was 281 per 100,000, while the corresponding rate among black females was 118. The male rate was 1.2 times and the female rate 1.6 times the corresponding rates for all males and all females in the age group.

Based on hospital data for 1990-1992, blacks had the highest overall rate of hospitalizations for coronary heart disease, with an age-adjusted rate of 77 hospitalizations per 10,000 population. Age-specific rates were 12 hospitalizations per 10,000 among blacks aged 18-44 and 146 per 10,000 among blacks aged 45-64. The male-to-female differential for heart disease found in all racial/ethnic groups was less striking among blacks, owing to the especially high rate of heart disease hospitalizations among black women compared to other women. Black males aged 45-64 were hospitalized for coronary heart disease at a rate of 174 per 10,000 persons, while black women experienced 123 hospitalizations per 10,000; this constituted a male-to-female ratio of 1.4 (compared with a 2.8 male-to-female ratio for the state as a whole).

Hispanics. The age-adjusted mortality rate for coronary heart disease among Hispanics was 94 per 100,000 population; this rate was less than half (0.4) the expected rate based on the experience of the total population. The age-adjusted mortality rate for coronary heart disease among Hispanic males was 106 per 100,000; among Hispanic females, it was 76 per 100,000.

Although based on small numbers, the age-specific death rate among Hispanics aged 45-64 appeared to be markedly lower than the total rate, at 73 per 100,000 population. The rate of death from coronary heart disease among Hispanic men aged 45-64 was 124 per 100,000 population, a rate about half that for all males in the age group. Calculation of a stable rate was not possible for Hispanic women, owing to the small number of deaths.

Based on hospital data for 1990-1992, the age-adjusted hospitalization rate among Hispanics for coronary heart disease was 54 per 10,000, lower than the rate for the total population (67). The age-specific hospitalization rate was 5 per 10,000 among Hispanics aged 18-44, and 99 per 10,000 among Hispanics aged 45-64. Among Hispanics aged 45-64, the hospitalization rate for this diagnosis was 113 per 10,000 among males and 83 per 10,000 among females. The male-to-female ratio for heart disease hospitalizations among Hispanics aged 45-64 was 1.4, markedly lower than the comparable statewide ratio (2.8). The lower ratio among Hispanics reflects both a higher rate of coronary heart disease hospitalizations among Hispanic women than the comparable rate for all women and a male rate that is lower than the comparable rate for all men.

Programs

A project is underway on the Menominee Reservation in Wisconsin to assess the prevalence of heart disease and its risk factors among Menominee adults. The Menominee Healthy Heart Project is part of a larger effort in which two Chippewa tribes in Minnesota are also participating. The physical examination of study participants will include a health history and personal interview, laboratory tests, and assessment of blood pressure and other physical findings. The project will measure the prevalence of heart disease in Menominees and determine if it is higher in some Indian communities than others. Also, by looking at past disease, the project will determine if heart disease is becoming more common over time. By assessing risk factors, such as diet, physical activity, and smoking, and comparing these factors to heart disease rates, recommendations can be made that decrease chances of developing heart problems. This will be important to participants and even more important to future generations.

Cancer

Cancer (malignant neoplasm) is the second leading cause of death in the United States (after heart disease). Cancer incidence and mortality rise with age. Smoking is the single most important risk factor for cancers of many sites; other known or suspected risks include alcohol intake, work place exposures, poor nutrition, and environmental pollutants. As with most causes of illness, incidence and mortality rates for many kinds of cancer are higher among persons at lower socioeconomic levels; this reflects the higher rates of risk factors accompanying poverty (e.g., higher rates of smoking, environmental pollution), poorer access to care (screening, diagnosis, and treatment), and lower education levels (less knowledge about risks and prevention).

Differences in cancer incidence and cancer mortality rates can be addressed by intensive risk-reduction programs aimed specifically at populations at higher risk, focusing on risk factors such as tobacco use, diet, and worksite exposures to carcinogens.

Although an increasing amount of cancer treatment is delivered in outpatient settings, information about hospitalizations for which cancer was the principal diagnosis can contribute to understanding the relative incidence of cancer in various population groups. A higher cancer hospitalization rate in a population may reflect factors other than a higher incidence: it may be partly due to local variations in treatment delivery. Some population groups are less likely to be diagnosed early through routine screening, less likely to receive adequate public health education, and less likely to have ready access to care.

National Findings

In 1988, the death rate for cancer among American adults aged 45-64 was highest among blacks (401 per 100,000), 1.4 times the rate for whites (289 per 100,000). The death rates for Hispanic and Asian American adults aged 45-64 were similar to each other, about half the rate among whites; while the rate for American Indians was about 40 percent lower than among whites.[60]

Wisconsin Findings

Overview. Death certificate data for 1987-1991 show that the rates of death from cancer increase with age. The overall mortality rate from cancer is higher among men, at least partly because males have historically had higher rates of smoking (Table 8).

Table 8. Rates of Death from Cancer Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991

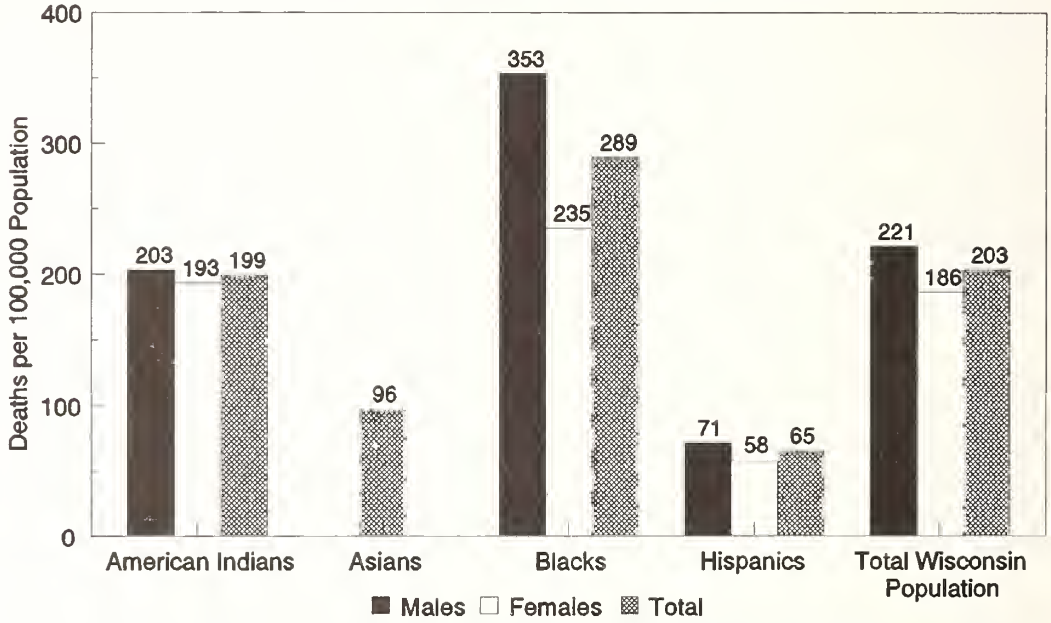
	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	221	17	300	1,427
Females	186	19	244	859
Total	203	18	271	1,090

Source: Wisconsin death certificates (resident data), Center for Health Statistics

* Includes all deaths from this cause, regardless of age. Rates are the number of deaths per 100,000 population in the age and sex group.

Based on death certificate data for 1987-1991, cancer deaths in Wisconsin occurred at a higher age-adjusted rate among blacks, especially black males (Figure 4). The higher cancer mortality among blacks reflected both higher incidence rates and lower rates of survival. American Indians in Wisconsin had a cancer death rate similar to that for the total Wisconsin population, in contrast to national statistics which show a lower rate of death from cancer among American Indians. Cancer mortality rates among Asians and Hispanics in Wisconsin appeared to be much lower than the rate for the total population.

Figure 4. Age-Adjusted Rates of Death from Cancer
By Race/Ethnicity and Sex, Wisconsin 1987-1991

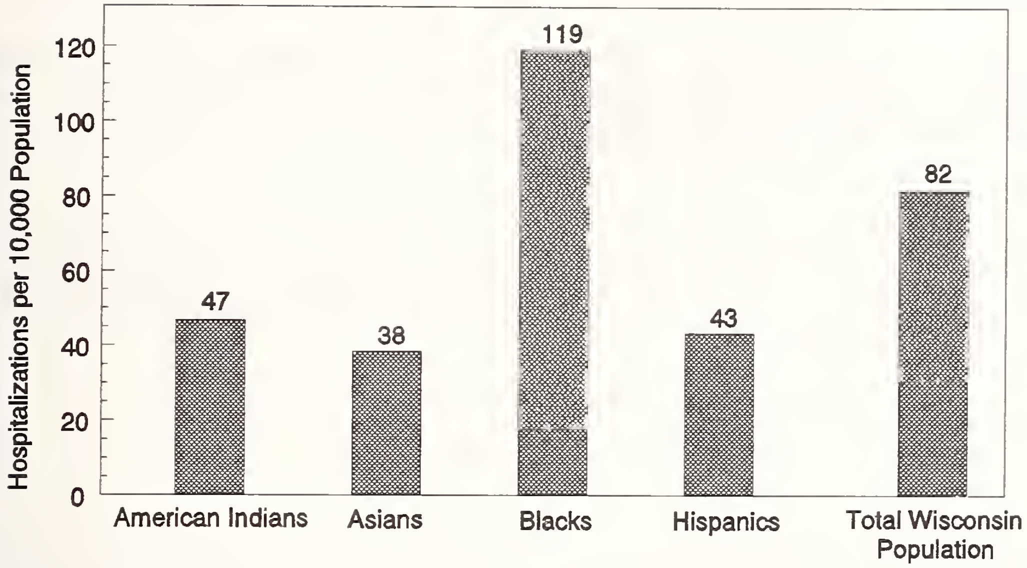


Note: Based on deaths at all ages attributed to cancer (ICD-9 codes 140-208).
There were too few deaths among Asians to calculate sex-specific rates.
Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

The overall age-adjusted rate of hospitalizations for cancer (of all sites) was highest among blacks (73 hospitalizations per 10,000 population). The age-adjusted rate for cancer hospitalizations was similar among Asians (26 per 10,000), American Indians (26 per 10,000), and Hispanics (29 per 10,000). Age-specific hospitalization rates for cancer were higher for blacks than the total population for both the 18-44 age group, when rates of cancer are comparatively low in all racial/ethnic groups; and the 45-64 age group, when cancer becomes more common (Figure 5).

Figure 5. Rates of Hospitalization for Cancer Among Persons Aged 45-64, By Race/Ethnicity, Wisconsin, 1990-1992



Note: Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

American Indians. The overall age-adjusted rate of cancer mortality among American Indians in Wisconsin for 1987-1991 was 199 deaths per 100,000 population; this was similar to the rate for the total population (203) (Table 9). Overall, American Indian males died at a somewhat lower rate from cancer than did all males in the state (203 vs. 221 per 100,000); but American Indian females died at a somewhat higher rate than did all women (193 vs. 186 per 100,000).

Table 9. Cancer Death Rates Among American Indians, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	203	**	327	831
Females	193	**	229	714
Total	199	24	277	764

Source: Wisconsin death certificates (resident data), Center for Health Statistics

* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.

** Fewer than 20 deaths during the 5-year period (no rate was calculated).

The overall rate of death from cancer among American Indians aged 45-64 was 277 per 100,000. The rate of death from cancer among American Indian males aged 45-64 was 327 per 100,000, or about 9 percent higher than the rate for all males in the age group. The death rate from cancer among American Indian women aged 45-64 was 229 per 100,000, a rate similar to that for all women in this age group.

The age-adjusted hospitalization rate for cancer among American Indians (26 per 10,000 population) was lower than the rate for the population as a whole (51 per 10,000) and for the white population (44 per 10,000). Among the 45-64-year-old population, the age-specific rate of cancer hospitalizations among American Indians (47 per 10,000) was also lower than the rate for the total population in this age group (82 per 10,000).

American Indians in 1987-1991 thus had lower hospital rates but similar death rates for cancer, compared to the Wisconsin population as a whole. Note that American Indians nationally had a cancer death rate about 40 percent below that of the white population.

Asians. In 1987-1991, the age-adjusted rate of death from cancer among Asians in Wisconsin was 96 deaths per 100,000 population. This was about half (47 percent) the rate in the total population. The age-specific cancer mortality rate among Asians aged 45-64 was 94 per 100,000, about 35 percent of the rate for all persons in the age group.

Asians were hospitalized with a principal diagnosis of cancer at the age-adjusted rate of 26 per 10,000, a rate similar to that for American Indians and Hispanics and lower than in the population as a whole.

African Americans. Based on Wisconsin death certificates from 1987-1991, blacks had the highest overall age-adjusted rate of cancer mortality (289 per 100,000 population) (Table 10). The comparable rate for the total population was 203 per 100,000. Among black males, the age-adjusted cancer mortality rate was 353 per 100,000; among black females, the rate was 235 per 100,000. The ostensible causes for similar national findings have been called "both stark and simple. Black men appear to be exposed in greater proportion to the risk factors for cancer--especially the behavioral risks of tobacco use and diet. Moreover,...both black men and black women appear to be diagnosed at a later stage of cancer, with a resultant reduced survival--i.e., high case-fatality rates."[61]

Table 10. Cancer Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	353	23	539	1,878
Females	235	23	304	944
Total	289	23	409	1,319

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.

Among Wisconsin blacks aged 18-44, the rate of death from cancer for 1987-1991 was 23 per 100,000 population, or about 1.3 times the rate for all persons in the age group (18 per 10,000). Cancer death rates were similar for black men and black women aged 18-44 (23 and 23, respectively); this contrasts with the age group as a whole, in which rates among women (19) were slightly higher than among men (17).

Among Wisconsin blacks aged 45-64, the rate of death from cancer was 409 per 100,000, or 1.5 times the all-races rate (271 per 100,000). In this age group, the death rate from cancer among black males was sharply higher than the rate among black females (539 vs. 304 per 100,000), although both these rates were markedly higher than the comparable rates for all races (300 and 244, respectively).

Based on data for 1990-1992, the overall age-adjusted rate of hospitalizations for cancer was highest among blacks (73 hospitalizations per 10,000 population). Expressed another way, blacks were hospitalized for cancer at an age-adjusted rate that was 1.4 times the rate that could be expected based on the rate in the total state population. Age-specific cancer hospitalization rates were higher among blacks than among the total population, both in the group aged 18-44 (14 vs. 10 per 10,000 population) and in the group aged 45-64 (126 vs. 82 per 10,000).

The Wisconsin Cancer Reporting System provides more detailed information about cancer among blacks in Wisconsin.[a] (Blacks are the only racial/ethnic minority group for whom enough cases were reported to permit analysis of findings.) According to CRS data for 1988-1990, a total of 61,695 cancer cases were diagnosed among Wisconsin residents during this three-year period; blacks accounted for 2.4 percent of these (1,456 cases).

Based on 1988-1990 CRS data, overall age-specific incidence rates for blacks in Wisconsin were about the same as for the total state population for young adults 20 through 44 years old, higher for adults between 45 and 74 years old (the period when most cancers are diagnosed), and lower for adults age 75 and over.

The five most common types of cancer among blacks during the three years of 1988-1990 were: colon (118 cases), lung (263 cases), female breast (194 cases), uterine cervix (102 cases), and prostate (147 cases). At all ages, blacks have a higher rate of lung cancer than the total population. Among black women, the age-specific incidence rate of cervical cancer increases with age, up to age 75 (rates decrease after age 45 among the total population of women). Prostate cancer occurs more frequently among black men than among all men under age 75, at approximately the same rate for black men and all men between ages 75 and 84, and more frequently among all men age 85 and over. Within age groups, the risk for developing colon cancer is virtually identical for blacks and the total population. Black women have lower age-specific incidence rates of breast cancer than do women in the total state population.

According to Wisconsin data from the Cancer Reporting System, cancer spreads beyond the organ of origin before diagnosis more often for blacks than for the population as a whole.[b] The most notable discrepancy was for prostate cancer, which spread distantly by the time of diagnosis for nearly twice as many black men as all men in the state. Distant spread of cervical cancer was rare for both black women and the total female population, but regional spread was more frequent among black women.

Routine screening tests are important in identifying cervical, breast, and prostate cancer in early stages. Lung cancer is difficult to identify early; the best way to prevent it is to avoid exposures associated with its development, especially smoking.

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[a] Hospitals that treat cancer patients in Wisconsin report newly diagnosed cases to the Wisconsin Cancer Reporting System, using a form that asks about demographic, diagnostic, and treatment information.

[b] Information about the extent of disease spread at diagnosis is important since for many cancers, treatment is more successful if the cancer is diagnosed while it is localized. (A tumor is **localized** if it has not spread beyond the primary organ; the cancer is said to have spread **regionally** when the cancer has spread only to an adjacent organ or to the lymph nodes that drain the primary-site organ; **distant** spread occurs when the tumor has spread to organs not in direct proximity to the original organ, often to the brain, lungs, or liver.)

Whether age, extent of disease spread at diagnosis, or occupation (a measure of socioeconomic status) is considered, blacks who die from their cancer do not live as long as the total population who die.[a] Of those patients who died, the average number of months between diagnosis and death declined as age at diagnosis increased. Within each age range, the average number of months between diagnosis and death was shorter for blacks. The number of months survived also declined for blacks and for the total population with more extensive disease spread; but for both local and regional spread, average survival time was longer for the total population than it was for blacks.

It is unlikely that the higher cancer mortality rates among blacks reflect true racial or genetic differences. Rather, the differences probably represent "myriad sociocultural, economic, behavioral, environmental, and educational factors. This is illustrated by the fact that a statistical adjustment for income or education brings the cancer rates for blacks actually below those for whites."[62] Wisconsin data from the Cancer Reporting System and death certificates suggest that "the small number (40) of managerial and professional blacks who died from their cancer lived longer than patients represented by any other race/occupation category."[63]

Hispanics. Based on death certificate data from 1987-1991, Hispanics in Wisconsin appear to have a lower age-adjusted mortality rate from cancer than does the total population of the state. Overall, Hispanics died from cancer at an age-adjusted rate of 65 per 100,000 population, about one-third the expected rate given the rate in the total population. Both Hispanic men (71 per 100,000) and Hispanic women (56 per 100,000) had sharply lower cancer death rates than the corresponding rates for the total population.

The rate of death from cancer among Hispanics aged 45-64 (both sexes combined) was 84 per 100,000 population, a rate markedly lower than the comparable rate for all persons in the age group (although based on a small number of deaths).

Hospital data suggest that Hispanics were hospitalized in 1990-1992 with a principal diagnosis of cancer at an age-adjusted rate (29 per 10,000) lower than both the total rate (51) and the non-Hispanic white rate (44). The age-specific rate among Hispanics aged 45-64 was 43 hospitalizations per 10,000 population, again lower than the comparable rate for the total population in the age group (82).

Programs

One program that is seeking to increase the early detection of cancer in Wisconsin is the Wisconsin Breast Cancer Screening Project, being conducted in 12 rural Wisconsin counties. This project provides free or low-cost mammograms to women age 40 and older who are not getting mammograms because of financial or geographic barriers. Under the auspices of this state-funded project, mammograms are available through designated (contracted) hospitals and clinics to residents of the following counties: Adams, Dunn, Clark, Iron, Kewaunee, Langlade, Marquette, Oconto, Price, Taylor, Trempealeau, and Wood.

With Centers for Disease Control funding, the Wisconsin Bureau of Public Health is designing a statewide program to improve breast and cervical cancer control that will include public and professional education, early detection, and quality assurance activities. Additional CDC funding is being sought to support screening services (mammograms and Pap tests). The target groups for this effort are yet to be selected, but will probably include women 18 and over, especially older women, who are socially or economically disadvantaged.

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[a] These findings are based on cancer deaths between 1988 and 1990 for which case reports are on file with the Wisconsin Cancer Reporting System, where the cancer was diagnosed in 1978 or later and was cited on the death certificate as the underlying cause of death.

In a major public health effort that has long-term implications for cancer prevention, Wisconsin has obtained a $6.5 million, 7-year contract to participate in Project ASSIST, the federal government's massive effort to reduce smoking in the United States. As was mentioned previously in the section on smoking, ASSIST Wisconsin will build on existing community resources to target groups with high smoking prevalence and high prevention potential: women of childbearing age, blue-collar workers, youth, people with lower education levels, and people of color. Special emphasis will be directed toward Milwaukee, since it has the highest prevalence of smoking and the highest rates of tobacco-related diseases in the state. Project ASSIST is one major effort to address the widening disparities in cancer incidence and survival in the Wisconsin population. As one study was summarized, "adequate societal resources must be redirected toward reducing the accelerating difference in cancer mortality rates between African-Americans and the rest of the United States population." [64]

Stroke

Despite declining incidence rates over the past several decades, stroke (cerebrovascular disease) remains a major cause of death and disability in the United States. A stroke occurs when there is a sudden obstruction or rupture in a cerebral artery. As a major cause of neurologic impairment, stroke often results in long-term disability; death rates thus do not adequately measure the impact of stroke in a population.

Hypertension (high blood pressure) is the primary risk factor for stroke; other risk factors include diabetes, excessive alcohol intake, and other cardiovascular disease (especially left ventricular hypertrophy). Obesity contributes to the risk of stroke by increasing the likelihood of hypertension and diabetes. Among blacks, sickle cell anemia is a risk factor for stroke, especially in the younger adult age groups.[65] The combination of hypertension, diabetes, and cigarette smoking is particularly risky for stroke.[66]

Stroke is relatively infrequent before age 50, and its incidence increases with age.

National Findings

Nationally, age-adjusted stroke death rates are approximately two times as high among black men and 1.8 times as high in black women as in white women, who have the lowest death rates from stroke.[67] Stroke death rates have not been found to be elevated in several Asian populations in the United States (Chinese, Japanese, Koreans, and Philippinos), nor has excess stroke mortality been found among Hispanics (largely Mexican-Americans) in Southern Texas.[68] Stroke deaths among American Indians as a whole appear to be slightly higher than the rest of the U.S. population.[69]

Wisconsin Findings

Overview. As with heart disease and cancer, mortality rates for stroke increase with age. According to death certificate information for the total Wisconsin population for 1987-1991, men have a higher rate of death from stroke before age 65; women have a higher rate after age 65 (Table 11).

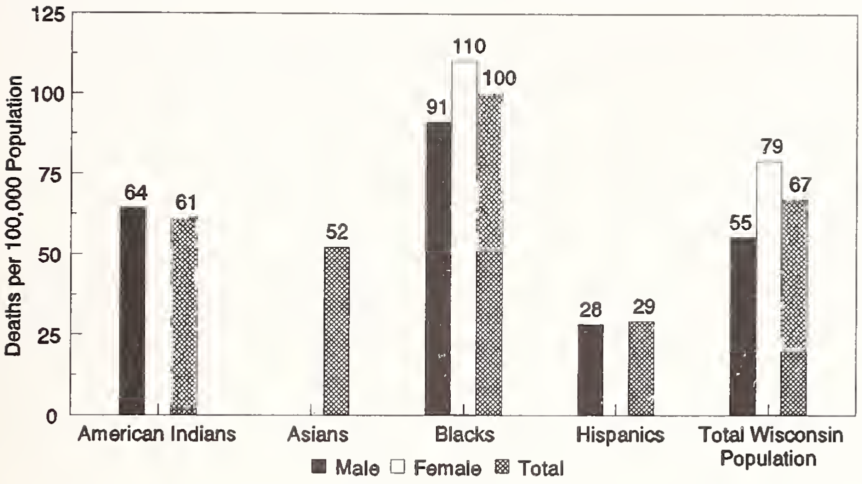
Table 11. Stroke Death Rates Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	55	<1	31	431
Females	79	0	23	482
Total	67	<1	27	461

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Includes all deaths from this cause, regardless of age.
Note: Rates are the number of deaths per 100,000 population in the age and sex group.

During the period 1987-1991, the rates of death from stroke were higher among blacks of both sexes and American Indian men, relative to the stroke mortality rates for the total population (Figure 6).

Figure 6. Age-Adjusted Rates of Death from Cerebrovascular Disease By Race/Ethnicity and Sex, Wisconsin 1987-1991

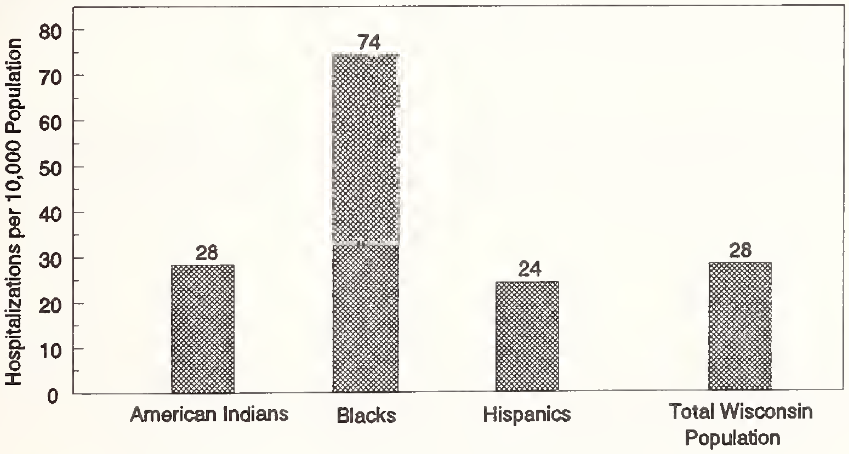


Note: Based on deaths at all ages attributed to cerebrovascular disease (ICD-9codes 430-438). There were too few deaths among Asians of either sex, American Indian females, and Hispanic females to calculate rates. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Age-adjusted hospitalization rates for stroke (combining all ages and both sexes) were lowest among Asians (20 per 10,000 population), Hispanics (22 per 10,000), and whites (24 per 10,000 population); somewhat higher among American Indians (28 per 10,000); and highest among blacks (64 per 10,000). Age-specific hospitalization rates for persons aged 45-64 showed a similar pattern (Figure 7).

Figure 7. Rates of Hospitalization for Cerebrovascular Disease Among Persons Aged 45-64, By Race/Ethnicity, Wisconsin, 1990-1992



Note: Based on principal diagnosis codes ICD-9-CM 430-438. There were too few hospitalizations among Asians to present a rate. Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File,for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

American Indians. Among American Indians in Wisconsin, the age-adjusted mortality rate from stroke was 61 per 100,000, lower than the rate for the total population (67 per 100,000). This overall rate, however, masked the higher rate found among American Indian males. Although based on a small number of deaths annually, the age-adjusted stroke mortality rate among American Indian men (64 per 100,000) was about 1.2 times the expected rate based on the total male population. (There were too few deaths attributed to stroke among American Indian women to calculate a stable rate.)

Data from the Indian Health Service suggest that Indians in the Bemidji IHS Area (Wisconsin, Minnesota, and Michigan) have the highest age-adjusted rate of mortality from cerebrovascular disease of any IHS area. In 1986-1988, the age-adjusted stroke mortality rate among Indians in the Bemidji area was reported to be 55 per 100,000 population.[70]

Based on hospital discharges that occurred in 1990-1992, American Indians in Wisconsin had an age-adjusted rate of hospitalizations for stroke (28 per 10,000) that was similar to the rate for the total population (29 per 10,000) but somewhat higher than the rate for the white population (24 per 10,000). Although based on a small number of hospitalizations, the age-specific rate of hospitalizations for stroke among American Indians aged 45-64 (28 per 10,000) was the same as the rate for the total population aged 45-64 but higher than the rate for the white population in this age group (22 per 10,000).

Asians. In 1987-1991, Asians in Wisconsin had an age-adjusted mortality rate from stroke of 52 deaths per 100,000 population, or 78 percent of the rate in the total state population (67). (There were too few such deaths to calculate sex-specific rates.) During 1990-1992, hospitalizations in which the principal diagnosis was stroke occurred at an age-adjusted rate among Asians (20 per 10,000 population) that was lower than both the rate for the white population (24) and the rate for the total population (28 per 10,000).

African Americans. Based on Wisconsin death certificate data for 1987-1991, the rates of death from stroke were higher among blacks of both sexes, compared with the population as a whole (Table 12). Age-adjusted mortality rates from stroke among blacks in Wisconsin were: 92 per 100,000 among black men, 110 per 100,000 among black women, and 100 per 100,000 for both sexes combined. (Comparable rates for the total Wisconsin population were 55 per 100,000 among men and 79 per 100,000 among women, for a total rate of 67 per 100,000.) Overall, the age-adjusted rate of black stroke mortality was 1.5 times the expected rate, given the rates in the total population.

Table 12. Stroke Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	91	**	76	452
Females	110	**	43	448
Total	100	**	58	449

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

While strokes are most frequent in all groups after age 65, it appears that the stroke differential for blacks is even higher among middle-aged adults than the overall age-adjusted rate would suggest. During the five-year period 1987-1991, an average of 17 deaths per year occurred among blacks aged 45-64 that were attributed on the death certificate to stroke. This translates into an age-specific rate of 58 deaths per

100,000 population, about 2 times the rate in the total population aged 45-64 (27 per 100,000). The male differential was even higher in this age group: the stroke mortality rate among black males aged 45-64 was 76 per 100,000, or 2.4 times the rate for all males. The mortality rate among black females aged 45-64 was 43 per 100,000, compared with 27 per 100,000 for all females in this age group.

Hospitalizations in which stroke was cited as the principal diagnosis occurred among blacks at an age-adjusted rate of 64 hospitalizations per 10,000 population. This was by far the highest rate of any racial or ethnic group, and over twice the rate that could be expected given the rate in the Wisconsin population as a whole.

Age-specific rates of hospitalization for 1990-1992 suggest that strokes among younger persons, although comparatively rare, are more likely to occur among blacks. The stroke hospitalization rate among blacks aged 18-44 was 7 per 10,000, or 3.3 times the total rate for this age group (2 per 10,000). Among blacks aged 45-64, the stroke hospitalization rate was 74 per 10,000, about 2.7 times the rate among all persons in this age group (28 per 10,000).

Hispanics. Among Hispanics, the overall age-adjusted rate of death from stroke was 30 per 100,000 population, or less than half the rate that could be expected based on the experience of the total population. The age-adjusted mortality rate for stroke among Hispanic males was 28 deaths per 100,000; there were too few deaths attributed to stroke among Hispanic females to calculate a rate.

During 1990-1992, hospitalizations for stroke among Hispanics occurred at an age-adjusted rate of 22 per 10,000 population, lower than the rate for the total population (29 per 10,000). Age-specific hospitalization data for 1990-1992 show that Hispanics aged 45-64 were hospitalized for stroke at a rate of 24 per 10,000 population; this was somewhat lower than the rate for the total population aged 45-64 (28 per 10,000).

Programs

Improved control of high blood pressure has been the crucial factor in a decline over the past decades in stroke frequency, most notably in African-American women.[71]

Diabetes

Diabetes is a group of diseases characterized by high levels of glucose or sugar in the blood, resulting from the inability of the body to produce or effectively use insulin (the hormone that changes glucose into energy). The long-term effects of diabetes can involve the eyes, the kidneys, the peripheral nervous system, the cardiovascular system, and the feet. Diabetes is a leading cause of blindness, amputations, and end-stage renal disease; it also is an important risk factor for stroke and heart disease.

About 95 percent of diabetes cases are NIDDM (noninsulin-dependent diabetes mellitus), which is closely associated with obesity prevalence in a population. The causes of obesity are multiple, but probably include a genetic predisposition to store energy not currently needed (as the body prepares for the possibility of eventual "famine"), and eating patterns that are high in fat and low in fiber.

Compared with current American eating patterns, traditional diets in the original cultures of U.S. minority groups are lower in fat and higher in fiber.[72] Although "there are still insufficient data to adequately document the prevalence of high-risk dietary patterns in minority populations," it appears that "contemporary consumption of high-fat foods is characteristic in many minority group diets and that, in some cases at least, the dietary fiber content is lower." Of course, a high-fat diet is typical of many Americans. Nevertheless, markedly higher rates of death and disability from diabetes among several minority groups in the United States warrant serious attention to the prevention and treatment of obesity as a primary means of preventing diabetes and its effects. It should also be noted, however, that obesity does not precede diabetes in all cases.[73]

National Findings

A prevalence of diabetes mellitus at least 50 percent higher than in whites has been reported for blacks, Hispanics (except Cuban Americans), Native Americans, and several Asian American populations.[74] The age-standardized prevalence of diabetes (both diagnosed and undiagnosed cases) has been estimated nationally as 6 percent in whites, 9 percent in Cubans, 10 percent in blacks, 13 percent in Mexican Americans, and 13 percent in Puerto Ricans.[75] In American Indians, the prevalence varies from tribe to tribe, but values of 20-30 percent are common, and they rise much higher in older adults.[76]

Wisconsin Findings

Overview. Many (if not most) deaths that involve diabetes are attributed on the death certificate to another cause, such as heart disease, stroke, or renal (kidney) disease. It has been estimated that diabetes may be associated with approximately eight times as many deaths as indicated by underlying cause on the death certificate.[77] For this reason, death certificate data greatly underrrepresent the significance of diabetes as a cause of morbidity and death.

Based on death certificate information from 1987-1991, the total age-adjusted rate of death from diabetes during the five-year period was 19 deaths per 100,000 population. While the rate among females was somewhat higher than the rate among males, this difference occurred wholly after the age of 65 (Table 13).

Table 13. Rates of Death from Diabetes Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991

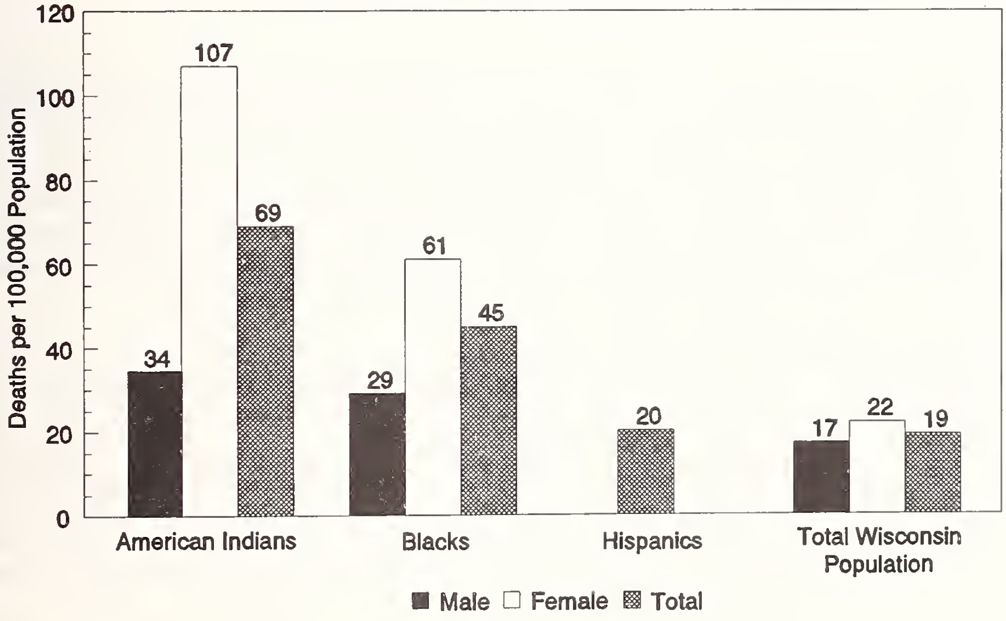
	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	17	2	19	112
Females	22	2	17	115
Total	19	2	18	114

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Includes all deaths from this cause, regardless of age.
Note: Rates are the number of deaths per 100,000 population in the age and sex group.

Based on Wisconsin death certificate data for 1987-1991, it appears that the rate of deaths attributed to diabetes is much higher among American Indians and blacks in Wisconsin than among the population of the state as a whole. Hispanics also had a slightly higher reported rate of death from diabetes.

Diabetes mortality was especially high among women in both blacks and American Indians. The age-adjusted mortality rate attributed to diabetes was 29 per 100,000 among black men and 61 per 100,000 among black women. Among American Indians in the state, age-adjusted mortality rates from diabetes were 34 per 100,000 among men, and 107 per 100,000 among women. Comparable rates for the total population were 17 per 100,000 among all men and 22 per 100,000 among all women (Figure 8).

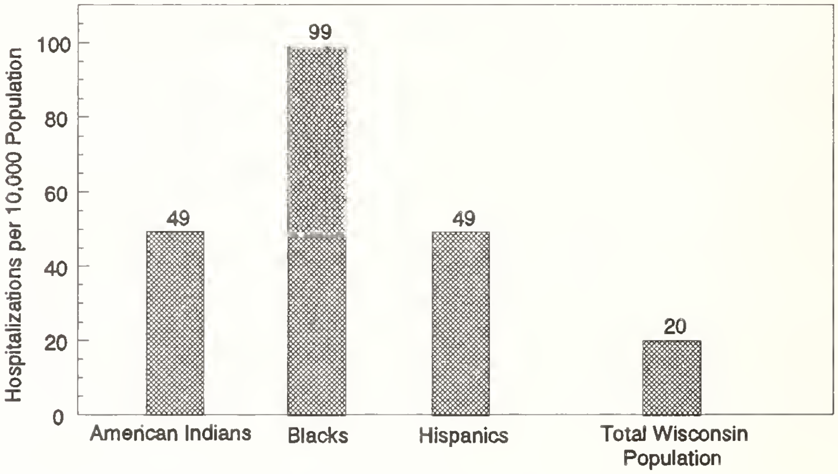
Figure 8. Age-Adjusted Rates of Death from Diabetes By Race/Ethnicity and Sex, Wisconsin 1987-1991



Note: Based on deaths at all ages attributed to diabetes (ICD-9 code 250). There were too few deaths among Asians to calculate rates; nor were sex-specific rates for Hispanics possible. Racial groups exclude Hispanics.
Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Rates of hospitalization for diabetes were higher among blacks, American Indians, and Hispanics than in the Wisconsin population as a whole. This is illustrated by the age-specific rates for persons aged 45-64 (Figure 9).

Figure 9. Rates of Hospitalization for Diabetes Among Persons Aged 45-64, By Race/Ethnicity, Wisconsin, 1990-1992



Note: There were too few hospitalizations among Asians to calculate an age-specific rate. Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's HospitalInpatient Discharge Data Base.

American Indians. The age-adjusted rate of death attributed to diabetes among American Indians in 1987-1991 was 69 per 100,000, or 3.6 times the expected rate based on the experience of the total population (Table 14). The difference was most striking among American Indian women, whose age-adjusted rate of diabetes mortality (107 per 100,000) was fully five times the expected rate. The age-adjusted mortality rate among American Indian men (34 per 100,000) was twice the expected rate. Comparable rates for the total population of Wisconsin were 22 per 100,000 among all women, and 17 per 100,000 among all men, for a combined total mortality rate from diabetes of 19 per 100,000 population.

Table 14. Diabetes Death Rates Among American Indians, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	34	**	**	**
Females	107	**	**	446
Total	69	**	79	306

Source: Wisconsin death certificates (resident data), Center for Health Statistics

* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.

** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Among American Indians aged 45-64 (both men and women), the rate of death attributed to diabetes was 79 per 100,000, more than 4 times the rate for the total population in this age group (18 per 100,000). (Numbers were too small to calculate sex-specific rates for American Indians in this age group.)

In 1990-1992, American Indians were hospitalized with a principal diagnosis of diabetes at a rate of 18 per 10,000; this was about 1.3 times the expected rate. American Indians aged 45-64 were hospitalized for diabetes at a rate of 49 per 10,000 population, more than twice the rate found in the total population aged 45-64 (20 per 10,000). (There were too few hospitalizations coded to diabetes among American Indians aged 18-44 to calculate a rate.)

Asians. Among Asians, hospitalizations with a principal diagnosis of diabetes occurred during 1990-1992 at an age-adjusted rate of 6 per 10,000, about 0.4 of the expected rate. Too few hospitalizations with this diagnosis occurred among Asians to permit calculation of age-specific rates.

African Americans. Based on death certificate data for 1987-1991, blacks of both sexes had higher age-adjusted rates of diabetes mortality than did the total population (Table 15). The age-adjusted rate among black males was 29 per 100,000 population, about 1.7 times the expected rate. Among black females, the age-adjusted mortality rate from diabetes was 61 per 100,000, or about 2.8 times the expected rate. Overall, blacks had an age-adjusted mortality rate from diabetes of 45 per 100,000 population.

Table 15. Diabetes Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	29	**	38	143
Females	61	**	56	272
Total	45	**	48	220

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Among black men aged 45-64, the mortality rate for diabetes was 38 per 100,000, twice the rate for all males in the age group. Among black women aged 45-64, the rate was 56 per 100,000, more than 3 times the rate for all women aged 45-64. For all blacks in this age group, the diabetes mortality rate was 48 per 100,000 (compared to 18 for the total population aged 45-64).

Compared with the population as a whole, blacks experienced a markedly higher rate of hospitalizations with a principal diagnosis of diabetes. Based on 1990-1992 data, their age-adjusted hospitalization rate was 47 hospitalizations for diabetes per 10,000 population, over 3 times the expected rate.

Among young adults aged 18-44, blacks had a higher age-specific rate of diabetes hospitalizations than the age group as a whole (26 vs. 8 per 10,000 population). Among middle-aged adults, the difference in diabetes hospitalization rates for blacks was even more marked: blacks aged 45-64 had a hospitalization rate of 99 per 10,000, nearly 5 times the rate for the age group as a whole (20 per 10,000).

Hispanics. The age-adjusted rate of mortality attributed to diabetes among Hispanics was 20 deaths per 100,000 population, about the same as the rate for the total population (19 per 100,000). The number of deaths was too small to examine sex-specific rates.

In contrast to the mortality rate, which was similar to the expected rate based on the total population, the 1990-1992 age-adjusted hospitalization rate for diabetes among Hispanics was about 1.4 times the expected rate, at 20 per 10,000 population. Age-specific hospitalization rates for diabetes were 9 per 10,000 among Hispanics aged 18-44 (similar to the rate for all persons aged 18-44), and 49 per 10,000 among Hispanics aged 45-64 (more than twice the rate for all persons aged 45-64).

Programs

Diabetes screening is of the utmost importance in a population at high risk for the disease, since early NIDDM is often without symptoms, yet complications may already be developing. When diabetes is diagnosed, the first and most important ongoing therapy is patient education. A patient who understands his or her disease and who participates in the therapeutic and goal-setting decisions is much more likely to follow the therapeutic program than a patient who is simply told what to do. The education of diabetic patients can take place in group settings. Recommendations for dietary changes, often necessary for weight control, will be most successful if they are sensitive to ethnic, cultural, social, and economic factors.[78]

In all patients with diabetes, regular evaluation for possible complications is vital. For example, "routine evaluation of all patients with diabetes mellitus by an ophthalmologist once each year is mandatory, and follow-up every three months may become necessary once retinopathy advances."[79] One major complication of diabetes--foot problems that may eventually lead to amputation--can be prevented by attention to foot care by every health care provider with whom the patient comes in contact; it is also important that the patient be apprised of the potential hazards of decreasing sensation in the foot. One group studying the problem of diabetes in American Indian populations of the United States has written: "Simple physical examination of the feet by an informed individual can be a limb-saving measure. It is mandatory for all health care professionals involved with the care of Amerindians to routinely request to see the patient's feet as part of their examination." [80]

The Metcalfe Park Health Center is a nurse-managed health care facility operated by the Marquette University College of Nursing that serves persons living in the Metcalfe Park community in Milwaukee. In addition to providing services such as physical examinations, immunizations, and screening tests, nurses and other health professionals at the center provide health teaching for diabetes and other conditions, helping patients learn how to manage their illness and stay healthy. Health services at the center are charged on a sliding fee scale, and everyone is welcome regardless of insurance status or ability to pay. The College of Nursing's goal is to get the Health Center started and eventually turn management of the center over to the Metcalfe Park community.

LEADING CAUSES OF MORTALITY AND MORBIDITY (INJURY)

INJURY OVERVIEW

HOMICIDE AND OTHER INTENTIONAL INJURY

UNINTENTIONAL (ACCIDENTAL) INJURY

Injury Overview

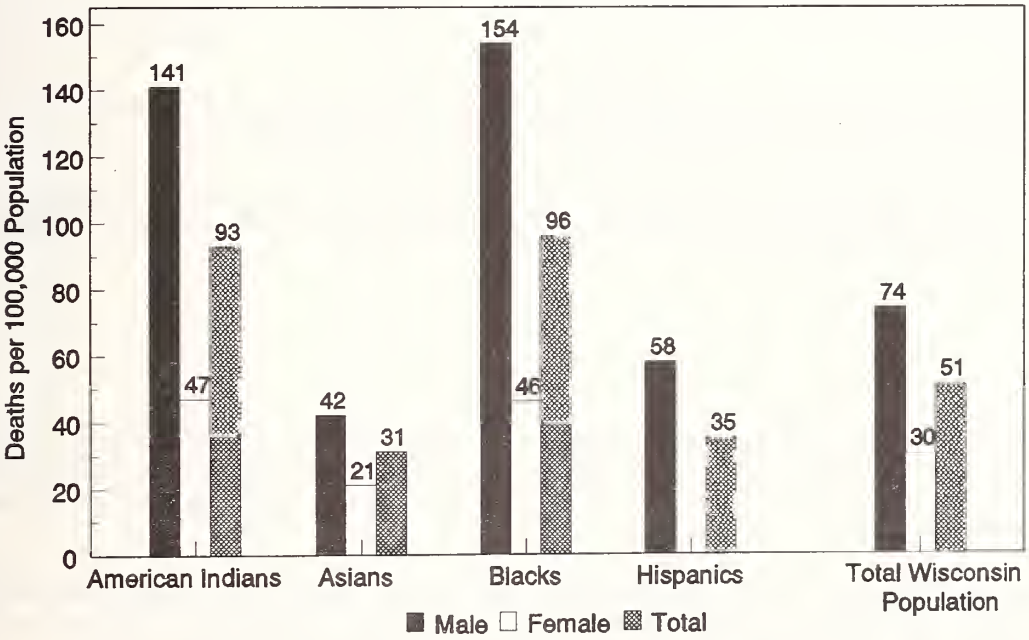
As the leading cause of death among children and adults aged 1-44, injury is a major public health problem. The costs of injury include the productive years of life lost in premature death and long-term disability; the medical resources used for care, treatment, and rehabilitation of injured persons; and the suffering experienced by injured persons and their families. Nationally, about two-thirds of injury deaths are the result of unintentional (accidental) injuries, and about one-third of injury deaths result from intentional injuries (homicides and suicides).[81]

This section consists mainly of two separate discussions: intentional injury, and unintentional injury. First, this overview presents Wisconsin rates of death and hospitalization for all injuries combined. (National findings are presented in the separate discussions of unintentional and intentional injury.)

According to five years of data (1987-1991), the rate of death from all injuries in Wisconsin was 51 deaths per 100,000 population (Figure 10). The overall rate of death from injuries among males (74 per 100,000) was over twice the rate among females (30 per 100,000). American Indians and African Americans experienced higher rates of death from injuries than did the Wisconsin population as a whole.

Differences in injury death rates by age within the adult population are addressed in the separate discussions of intentional and unintentional injuries.

Figure 10. Age-Adjusted Rates of Death from All Injuries, By Race/Ethnicity and Sex, Wisconsin 1987-1991

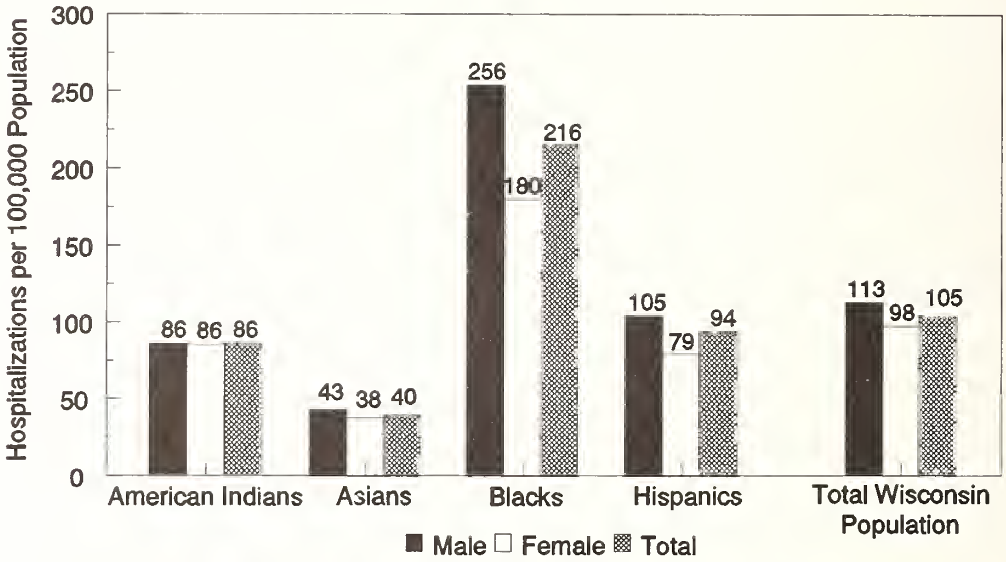


Note: Based on deaths at all ages attributed to injury (ICD-9 codes 800-999). There were too few deaths among Hispanic females to calculate a rate. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Compared with injury death rate patterns, injury hospitalization rates present a somewhat different picture (Figure 11). The most marked difference is that American Indians do not appear to experience higher rates of injury hospitalization compared with the total Wisconsin population. Also, differences between males and females in injury hospitalization rates are not as striking as in injury death rates.

Figure 11. Age-Adjusted Rates of Hospitalizations for All Injuries, By Race/Ethnicity and Sex, Wisconsin 1990-1992



Note: Includes all hospitalizations (at any age) in which the principal diagnosis at discharge was injury (ICD-9-CM codes 800-999). Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

Over all age groups, African Americans experienced the highest rates of hospitalization for injury in Wisconsin (216 per 10,000 population). American Indians and Hispanics had injury hospitalization rates somewhat lower than rates for the total population, while Asians experienced markedly lower rates of injury hospitalizations.

It is not possible to analyze injury hospitalizations separately for unintentional and intentional injuries, because the information necessary to make this distinction is missing on the majority of hospital records. Consequently, all injury hospitalization findings for adults ages 18-64 are presented here.

In general, rates of injury hospitalizations are somewhat higher in the 45-64-year-old group than among persons aged 18-44 (Table 16). This contrasts with injury deaths, which occur more frequently at ages 18-44 than at ages 45-64.

Table 16. **Rates of Hospitalization for Injuries Among Persons Aged 18-44 and 45-64, By Race/Ethnicity and Sex, Wisconsin 1990-1992**

	Rates 18-44*			Rates 45-64*		
Racial/Ethnic Group	Males	Females	Total	Males	Females	Total
Total Wisconsin Population	107	62	84	119	91	105
American Indians	97	63	79	90	73	81
Asians	30	23	26	66	**	45
Blacks	310	133	214	237	163	196
Hispanics	108	51	81	126	77	102

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* Rates are the number of hospitalizations per 10,000 population, based on hospitalizations in which any injury (ICD-9-CM codes 800-999) was cited as the principal diagnosis at discharge.

** Fewer than 20 hospitalizations in the analyzed period; no rate is presented.

Homicide and Other Intentional Injury

Intentional injuries, comprising homicide and suicide, are a leading cause of premature mortality in the United States. Interpersonal violence is a major public health problem: in 1988, homicide was the 12th leading cause of death. The U.S. homicide rate is substantially higher than in other industrialized countries. Blacks and other minorities are at particularly high risk of injury and death due to interpersonal violence, with much of the difference due to the stressful conditions of living in urban environments where there are high rates of poverty.[82]

The Secretary's Task Force on Black and Minority Health (U.S. Department of Health and Human Services) reported in 1986 that the problem of violent deaths among minorities in the United States can be divided into seven areas of excess deaths: black male homicide, black female homicide, Hispanic male homicide, Native American homicide, Native American deaths from unintentional injury, Native American suicide, and Chinese female suicide. (Excess deaths was a statistical term used by the Task Force to describe those deaths that would not have occurred if minorities had the same death rates as non-minorities.)[83]

National Findings

Nationally, homicide is the leading cause of death among black men aged 15 to 44. For men aged 25-34, the black homicide rate is seven times that of whites. Black males have a lifetime chance of 1 in 21 of dying by homicide, compared to 1 in 131 for white males. Black women also have a higher risk than their white counterparts of being homicide victims: their lifetime chance is 1 in 104, compared to 1 in 369 for white women. The Task Force found that homicide and unintentional injuries together account for 35 percent of all excess deaths among blacks under age 45 and 19 percent of excess deaths in blacks under age 70.

The Task Force cited evidence from the Southwestern United States that Hispanics in those states have a homicide rate about two and a half times higher than that of Anglos (non-Hispanic whites). The gap between Hispanic and Anglo men is even more pronounced. About 39 Hispanic men out of every 100,000 in the Southwest were found to be homicide victims, compared to 11 out of every 100,000 Anglo men. Hispanic women were found to have about the same rate of death from homicide as Anglo women.

Among Native Americans nationally, the Task Force documented high rates of unintentional (accidental) injury, suicide, and homicide. Overall, death from unintentional injuries is two and a half times more common for American Indians and Alaska Natives than for the general U.S. population. Motor vehicle crashes account for the majority of these deaths. The suicide rate among American Indians nationally is about 20 percent higher than the rate for the total population; the suicide rate varies widely by tribe. Homicide rates among Native Americans as a whole exceed national rates by 70 percent.

Suicide rates for Asians in the United States are lower than rates for other groups until middle age. At about age 45, the suicide rate for Chinese women in the United States begins to rise with each successive age group until it reaches its peak in the oldest age groups.

Wisconsin Findings

Overview. Based on five years of data (1987-1991), the total mortality rate due to homicide in Wisconsin was 4 deaths per 100,000 population (Table 17). The homicide mortality rate among males in Wisconsin (6 per 100,000) was three times the rate among women (2 per 100,000). Most homicide deaths occurred in the 18-44-year-old group.

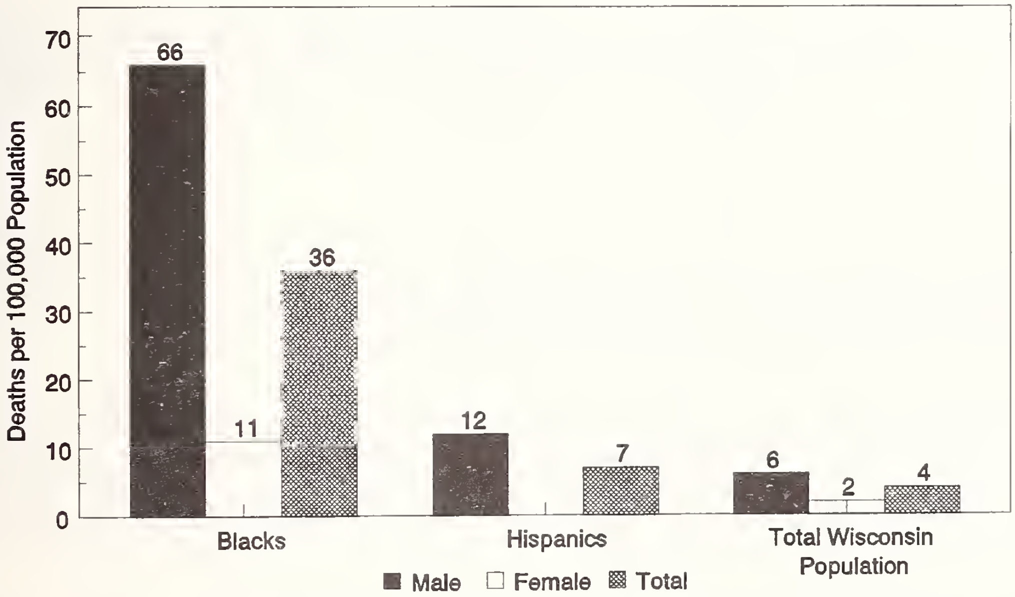
Table 17. **Rates of Death from Homicide Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991**

	Total Rate*	Rate 18-44	Rate 45-64
Males	6	10	4
Females	2	3	2
Total	4	6	3

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Includes all deaths from this cause, regardless of age. Rates are the number of deaths per 100,000 population in the age and sex group.

Similar to national findings, Wisconsin death certificates for 1987-1991 show comparatively high rates of death from homicide among blacks in Wisconsin (Figure 12). Overall, blacks in Wisconsin died from homicide at an age-adjusted rate (36 per 100,000) about 9 times the expected rate. The risk was higher among black men, although blacks of both sexes were at higher risk when compared to the population as a whole.

Figure 12. Age-Adjusted Rates of Death from Homicide By Race/Ethnicity and Sex, Wisconsin 1987-1991



Note: Based on deaths at all ages attributed to homicide (ICD-9 codes 960-978). There were too few deaths among American Indians, Asians, and Hispanic females to calculate rates. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Hispanics in Wisconsin also died from homicide at a rate higher than expected; their age-adjusted homicide mortality rate (8 per 100,000) was about 1.75 times the expected rate. The excess mortality from homicide among Hispanics occurred entirely among men aged 18-44.

There were too few homicide deaths among American Indians in 1987-1991 to calculate a stable mortality rate. No homicide deaths occurred among Asians in Wisconsin during the years 1987-1991.

An examination of mortality data for the five-year period 1987-1991 showed that no minority group experienced a higher rate of suicide than either the state population as a whole or the white population.

American Indians. Owing to the small number of deaths attributed to homicide among American Indians in Wisconsin (an average of less than 3 deaths per year during 1987-1991), no homicide mortality rate could be calculated for the American Indian population.

Asians. No homicide deaths among Asians were recorded in the 1987-1991 period.

African Americans. For the years 1987-1991, blacks had the highest age-adjusted mortality rate from homicide in Wisconsin, at 36 deaths per 100,000 population; this was about 9 times the expected rate given the rate in the total population (Table 18).

Table 18. Homicide Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	66	128	38	**
Females	11	16	**	**
Total	36	67	21	**

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

The homicide rate differential by sex was greatest among blacks: the age-adjusted mortality rate among black males (all ages) was 66 per 100,000 population, about 6 times the rate found among black females (11 per 100,000). The rate at which black males died from homicide was 11 times the rate that could have been expected based on the rate among all males in the state. Black females died from homicide at 6 times the rate among all Wisconsin females.

Black men aged 18-44 died from homicide at a rate of 128 per 100,000 population, 13 times the rate for all males in this age group (10 per 100,000). Black women aged 18-44 died from homicide at a rate of 16 per 100,000 population, about 5 times higher than the rate for all women in this age group (3 per 100,000). Compared to 18-44-year-olds, blacks aged 45-64 died from homicide at a much lower rate. The homicide mortality rate among blacks aged 45-64 was 21 per 100,000. Black males aged 45-64 died from homicide at a rate of 38 per 100,000; there were too few homicide deaths among black females aged 45-64 (an average of one death per year) to calculate a stable rate.

Hispanics. During the years 1987-1991, the age-adjusted mortality rate from homicide among Hispanics (8 per 100,000) was about 1.75 times the expected rate based on the total population. Most Hispanic deaths from homicide during the five-year period occurred among men (an average of 6 deaths each year). The age-adjusted mortality rate from homicide among Hispanic men was 12 per 100,000, or twice the expected rate. The number of deaths from homicide among Hispanic women (an average of one death per year) was too small to calculate a rate.

Age-specific data indicate that homicide deaths occurred among Hispanic males aged 18-44 at a rate of 23 deaths per 100,000 population. The comparable rate among all males aged 18-44 was 10 per 100,000. During the five-year period, no homicide deaths occurred among Hispanics aged 45-64.

Unintentional (Accidental) Injury

National Findings

While the majority of unintentional injury deaths occur as the result of motor vehicle crashes, other all-too-common sources of fatal injury include falls, drownings, poisonings, fires, burns, and firearms. National data for 1988 indicated that unintentional injuries constituted the leading cause of death for American Indian, Hispanic, Asian, and white persons aged 25-44 years.[84] The rate for American Indians was nearly three times the rate for white adults. The injury death rate for black adults was about 44 percent higher than for white adults, while the rate for Hispanics was about 20 percent higher than the rate for white adults. Asian adults had the lowest injury death rate, less than half the rate for white adults.

Unintentional injuries were also among the leading causes of death among adults aged 45-64. The injury death rate in this age group nationally was highest for American Indians, at more than twice the rate among white adults. Black adults aged 45-64 had an injury death rate that was 70 percent higher than the comparable rate among whites. Hispanics in the age group had a rate similar to that of non-Hispanic whites; while Asians aged 45-64 died from injuries at a rate about 40 percent lower than the comparable white rate.

Wisconsin Findings

Overview. Death certificate data for 1987-1991 illustrate the higher risk of death from unintentional injuries among males. The overall rate of death from unintentional injury, or "accidents,"[a] was 34 deaths per 100,000 population. Wisconsin males died at the rate of 46 per 100,000, while Wisconsin females died at the rate of 23 per 100,000 (Table 19).

Table 19. Rates of Death from Unintentional Injury Among Total Wisconsin Population, By Age and Sex, Wisconsin 1987-1991

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	46	50	38	11
Females	23	14	15	70
Total	34	32	26	86

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Includes all deaths from this cause, regardless of age.
Note: Rates are the number of deaths per 100,000 population in the age and sex group.

During the years 1987-1991, American Indians had a higher rate of death from unintentional injuries than any other group in the Wisconsin population (Figure 13). Their total age-adjusted mortality rate from unintentional injuries was 71 per 100,000, twice the expected rate. Mortality rates from this cause were highest among American Indian men. The rate among American Indian men aged 45-64 (164 per 100,000) was higher than the rate among 18-44-year-old American Indian men (111 per 100,000).

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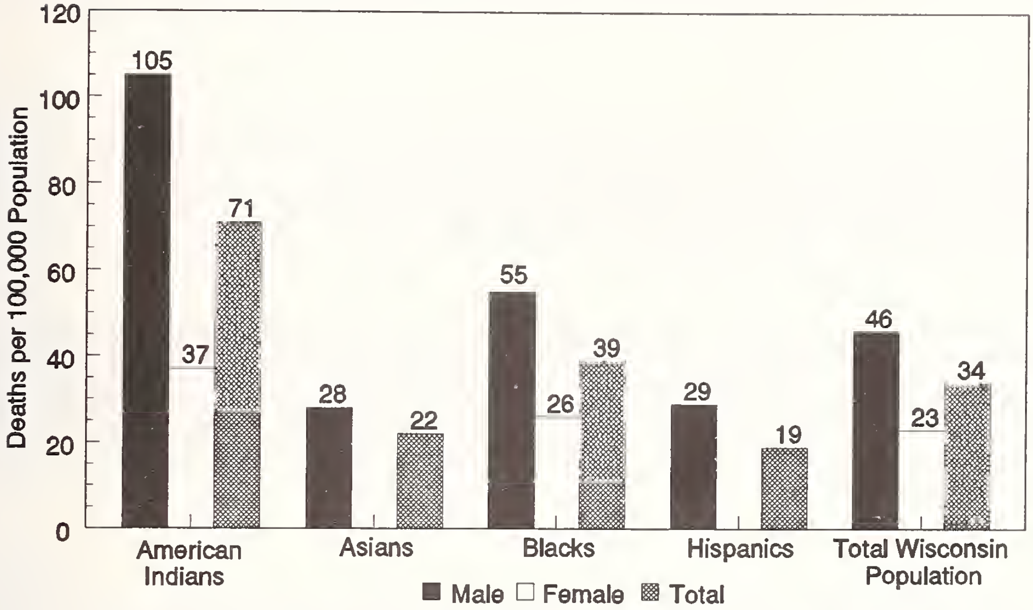
[a] The public health community no longer uses this term, since it implies these events are random and not susceptible to preventive measures.

Figure 13. Age-Adjusted Rates of Death from Unintentional Injuries, By Race/Ethnicity and Sex, Wisconsin 1987-1991



Note: "Unintentional injuries" include those in which intent was undetermined or unknown. There were too few deaths among Asian and Hispanic females to calculate rates. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

African Americans in Wisconsin also experienced a mortality rate from unintentional injuries somewhat higher than the total state rate. Their age-adjusted rate of death from unintentional injuries was 39 per 100,000, about 1.1 times the expected rate. Middle-aged blacks, both men and women, died from this cause at a higher rate than did blacks aged 18-44. Black men aged 45-64 died from unintentional injuries at a rate of 68 per 100,000, or 1.8 times the rate for all men in this age group; black women aged 45-64 had an injury death rate (25 per 100,000) that was 1.6 times the rate for all women in the age group.

Among Hispanics as a whole, the mortality rate attributed to unintentional injuries (19 per 100,000) was lower than for the total Wisconsin population. Most deaths from unintentional injuries among Hispanics occurred among men aged 18-44, who had a mortality rate in 1987-1991 of 37 per 100,000.

The age-adjusted rate of death from unintentional injuries among Asians in Wisconsin was 22 per 100,000 population, lower than the rate in the total population.

American Indians. American Indians experienced a total age-adjusted death rate from unintentional injury in 1987-1991 of 71 per 100,000 population, 2 times the expected rate (Table 20). The difference was greatest among American Indian males, whose rate of death from injury (105 per 100,000) was 2.3 times the expected rate. The unintentional injury death rate among American Indian females (37 per 100,000) was 1.6 times the expected rate.

Table 20. **Unintentional Injury Death Rates Among American Indians, By Age and Sex, Wisconsin 1987-1991**

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	105	111	164	**
Females	37	**	**	**
Total	71	67	99	**

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

According to age-specific data, the unintentional injury death rate is particularly high among middle-aged American Indian men. At ages 18-44, American Indian males died from unintentional injury at an age-specific rate of 111 per 100,000, a rate that was 2.2 times the rate among all men in the age group. At ages 45-64, Indian men died from injury at a rate of 164 per 100,000, or more than 4 times the rate for all 45-64-year-old men. There were too few deaths from this cause among American Indian women to calculate age-specific rates.

Asians. Asians in Wisconsin experienced a mortality rate from unintentional injuries of 22 per 100,000 in 1987-1991, lower than the rate in the total Wisconsin population (34). Among Asian men, the mortality rate from unintentional injuries was 28 per 100,000. There were too few such deaths among Asian women to calculate a separate rate.

African Americans. During the years 1987-1991, blacks died from unintentional injuries at an overall age-adjusted rate (39 per 100,000) that was 1.1 times the expected rate. The difference was more marked among males (Table 21). Black males died from injuries at an age-adjusted rate of 55 per 100,000, which was 1.2 times the expected rate. The rate among black females was 26 per 100,000, or 1.1 times the expected rate.

Table 21. **Unintentional Injury Death Rates Among Blacks, By Age and Sex, Wisconsin 1987-1991**

	Total Rate*	Rate 18-44	Rate 45-64	Rate 65+
Males	55	50	68	143
Females	26	11	25	**
Total	39	29	44	86

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Age-adjusted. Other rates are age-specific. Rates are number of deaths per 100,000 population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Among blacks aged 18-44, unintentional injury deaths occurred among men at a rate (50 per 100,000) the same as the rate for all men in this age group (50); the injury death rate among black women aged 18-44 (11 per 100,000) was slightly lower than the rate for all women aged 18-44 (14). Unintentional injury death rates among middle-aged blacks, however, were higher than for the total middle-aged population: black men aged 45-64 died from unintentional injuries at a rate of 68 per 100,000, or 1.8 times the rate for all men in this age group (38); black women aged 45-64 had an injury death rate (25 per 100,000) that was 1.6 times the rate for all women in the age group (15).

Hispanics. Death certificate data for 1987-1991 suggest that Hispanics in Wisconsin had lower rates of death from injuries than the Wisconsin population as a whole. Their age-adjusted death rate from unintentional injuries was 19 deaths per 100,000 population, about 0.6 of the expected rate. Among Hispanic males, the total age-adjusted death rate from unintentional injuries was 29 per 100,000, again about 0.6 of the expected rate. There were too few such deaths among Hispanic females to permit analysis.

Most of the deaths from unintentional injury among Hispanics occurred among men aged 18-44. Hispanic men in this age group died from unintentional injury at a rate of 37 per 100,000, about 0.7 of the rate for all men aged 18-44. Calculation of a rate was not possible for other Hispanics (men aged 45-64, women in either age group) owing to the small number of deaths in each category.

Programs

The Menominee Injury Prevention Program, funded by an Indian Health Services contract, is operated from the environmental health department in the Menominee Tribal Clinic. Since 1985, the project has sought to prevent unintentional injuries among the approximately 4,000 reservation residents. Project staff keep track of the occurrence of severe injuries using monthly reviews of "run sheets" from the tribal ambulance service and logs from hospital emergency departments. On-site investigations are made of certain injuries such as motor vehicle crashes, falls, etc. Findings are used to target prevention activities. Current recommendations derived from four years of injury surveillance (1987-1990) include the following specific program areas: motor vehicle crashes related to alcohol and the 20-30 age category; falls in general and those related to alcohol; suicide and assault in the 20-30 age category and related to alcohol; and the overall alcohol problem.

Other IHS-funded injury prevention activities are occurring on all 11 Wisconsin reservations, according to a representative of the IHS Office of Environmental Health and Engineering in Rhinelander.

COMMUNICABLE DISEASES

SEXUALLY TRANSMITTED DISEASES

AIDS/HIV

TUBERCULOSIS

HEPATITIS B

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) are infections that not only contribute to sizable acute morbidity, but also may lead to serious aftereffects including pelvic inflammatory disease, ectopic pregnancy and other complications of pregnancy, infertility in women and in men, and transmission of infections to newborns and infants. STDs have also been associated with dysplasia and carcinoma of the cervix and penile cancer.[85]

National Findings

The incidence of some sexually transmitted diseases is much higher in some minority groups in the United States than in the white population.[86] Poverty, which is more common among some minorities, is closely associated with the prevalence of STDs and may be a link between membership in a minority population and an increased risk.

Wisconsin Findings

The population at increased risk for STDs is young people with multiple sexual partners. An estimated 30,000 teenagers are infected with STDs annually in Wisconsin, and 65 percent of all STD cases occur among individuals less than 25 years of age.[87]

Data on STDs in Wisconsin are drawn from reports to the Sexually Transmitted Disease Program in the Wisconsin Division of Health. Such data must be used with caution, because they are not reported with the same completeness by all providers of care. Private health care practitioners tend to underreport these conditions; conversely, reporting from STD clinics tends to be more complete. Also, the high number of cases for which race is unreported prevents an accurate assessment of incidence by race.[88]

Wisconsin data indicate higher proportions of reported STDs among blacks, compared to their proportion of the population (Table 22). For the reasons stated above, no accurate assessment of incidence can be made.

Table 22. Reported Cases of Sexually Transmitted Diseases, By Race, Wisconsin 1991

Disease	Amer. Indian	Asian	Blacks	Whites	Other and Unspecified	Total
Chlamydia trachomatis infections	132	45	4,454	6,548	2,313	13,492
Gonorrhea	20	5	6,149	730	946	7,850
Syphilis	7	7	902	84	24	1,024
NGU[1]	9	*	759	154	21	943
Gonococcal PID[2]	*	*	181	49	23	254
Chlamydial PID	*	*	145	254	42	444
Other PID[3]	*	*	38	12	*	52

Source: Sexually Transmitted Disease Program, Communicable Diseases Section, Bureau of Public Health, Wisconsin Division of Health. (Note: This program does not collect Hispanic ethnicity information.)

* Fewer than 5 reported cases; not shown.

[1] Non-gonococcal urethritis

[2] Pelvic inflammatory disease

[3] Non-chlamydial/non-gonococcal pelvic inflammatory disease

Pelvic inflammatory disease (PID) increases the likelihood of ectopic pregnancy and involuntary infertility. Based on 1989-91 hospitalization data, there were approximately 1,535 hospitalizations yearly in which the principal diagnosis was PID (defined as ICD-9-CM code 614.9); 1,242 of these cases occurred among women aged 18-44. The rate of PID hospitalization differed by race. The age-specific rate of PID hospitalization among black women (45 per 10,000 women aged 18-44) was 3.7 times the total rate for women in this age group (12 per 10,000). The rate of PID hospitalizations among Hispanic women aged 18-44 was 11 per 10,000, about 0.9 of the total rate. Among Asians and American Indians, there were too few hospitalizations in which PID was the principal diagnosis to calculate a rate.

Programs

STD testing and counseling is available through local public health agencies throughout the state. For example, the Beloit Health Department funds STD prevention efforts at the Fourth Street Center. Since March 1975, it has served persons of all ages and incomes, especially those in Beloit's minority community. As part of its STD prevention efforts, the Fourth Street Center offers a walk-in clinic (no appointment necessary), individual education and counseling, follow-through on contacts, group educational presentations on request, and referrals to other community agencies when appropriate.

In Green Bay, the N.E.W. Community Clinic was formed in 1971 as the Green Bay Area Free Clinic; its mission is to provide access to care where there are gaps in the area health care delivery system. As part of its provision of medical care, the N.E.W. clinic offers STD testing and treatment on a walk-in basis for people with low incomes who are uninsured; charges are based on a sliding scale.

The Milwaukee City Health Department maintains a comprehensive STD clinic that provides STD services to residents of Milwaukee. Also, Planned Parenthood and other family planning agencies throughout the state offer STD testing services as well as limited STD counseling and follow-up.

AIDS/HIV

Human immunodeficiency virus (HIV) is an infectious agent that is transmitted sexually, through contact with infected blood, and from infected mothers to their newborn children. Infection with HIV is marked by a long-term and progressive destruction of the immune system. When the immune capacity becomes significantly impaired, HIV-infected individuals are at high risk of acquiring a variety of conditions, often referred to an opportunistic diseases, which do not usually affect persons with normal immunity. When this occurs, HIV-infected persons are considered to have acquired immunodeficiency syndrome (AIDS). On average it takes 8-10 years from initial HIV infection to the development of AIDS; most persons with AIDS die within 2-3 years of diagnosis.

While there is no vaccine that can prevent HIV infection, it is preventable through avoidance of behaviors that place individuals at risk of HIV infection. There are treatments that can improve the health of persons with HIV infection and can extend the life of persons with AIDS; however, there is at this time no cure for either condition.

National Findings

The Centers for Disease Control and Prevention (CDC) has estimated that at the end of 1992 the number of persons with HIV infection in the United States was about one million persons (400 per 100,000 population). They also estimate that by 1994 an additional 80,000 to 160,000 new HIV infections will occur.

The first cases of AIDS were reported in 1981; in each subsequent year the number of reported cases has increased. In 1992, 47,106 cases of AIDS were reported in the United States (18 per 100,000 population), bringing the total number of reported cases to 253,448. The CDC projects that in 1993 and 1994 an additional 134,000 cases of AIDS will occur nationwide.

Although nationally the majority of AIDS cases have been reported among whites, AIDS has had a disproportionally higher impact upon African American and Hispanic communities. While African Americans constitute 12 percent and Hispanics 9 percent of the United States population, 30 percent of reported AIDS cases have been among African Americans and 17 percent among Hispanics. Among women and children with AIDS this disparity has been even more pronounced. African Americans represent 53 percent and Hispanics represent 21 percent of all reported AIDS cases among adult females. Seventy-eight percent of pediatric AIDS cases are among African American children and Hispanic children.

It is important to stress that there is no evidence that race or ethnicity is a biological risk factor for HIV infection. The racial differences in HIV infection rates and AIDS incidence can best be explained by social considerations. Among economically disadvantaged populations, particularly in inner cities, rates of sexually transmitted disease and drug use, both indices of risk for HIV infection, are significantly higher than for more affluent groups.

Sharing of needles by injecting drug users is a primary mode of HIV transmission; in addition, HIV-infected drug users can pass HIV infection to their sexual partners and/or newborn children. Among all adults with AIDS who report injecting drug use or heterosexual contact with an injecting drug user as their primary risk exposures, 74 percent are African American or Hispanic. Sixty-six percent of African American and Hispanic infants who acquired AIDS through maternal-to-child transmission of HIV had a mother whose primary risk exposure was injecting drug use or heterosexual contact with an injecting drug user.

Wisconsin Findings

The Wisconsin Division of Health (DOH) has estimated that at the end of 1992 in Wisconsin approximately 14,000 persons (280 per 100,000 population) had HIV infection. Only approximately 20 percent of these persons had been reported to the DOH, and it is believed that the vast majority have not been diagnosed and are unaware of their infection. In 1992, 304 cases of AIDS (6 per 100,000 population) were reported in Wisconsin, bringing the total number of reported cases in Wisconsin to 1,391. Because of the estimated number of persons with HIV infection in Wisconsin, AIDS case numbers in Wisconsin will likely increase for at least several years.

Although the majority (76 percent) of AIDS cases in Wisconsin have been among whites, similar to the national pattern AIDS has had a disproportionally high impact upon African American and Hispanic communities in this state. African Americans represent 5 percent and Hispanics 2 percent of the total state population; through 1992, 17 percent of Wisconsin AIDS cases were reported among African Americans, 6 percent among Hispanics. In Wisconsin the per capita AIDS incidence among both African Americans and Hispanics is more than four-fold greater than among whites. Some of these differences in reported rates may be the results of differences in reporting practices; however, it is clear that this epidemic has had and continues to have a more severe impact upon communities of color in Wisconsin.

Programs

A report issued in January 1993 from the National Commission on AIDS detailed the disproportionate effect of AIDS on racial and ethnic minority populations, and found that dealing with the epidemic is being hampered by discrimination, poverty, and a lack of health services. The panel recommended that prevention and treatment programs aimed at ethnic groups be reinforced. In addition, several commissions studying AIDS have recommended universal access to drug treatment programs on demand as an essential means of preventing AIDS in minority and other populations with high rates of poverty. The commission found that ethnic diversity must be recognized in designing AIDS prevention and treatment programs. Members of minorities should be included in clinical trials for AIDS treatments and should be involved in training health workers who have contact with their communities. The commission also pointed out that policy makers must recognize that distrust of the government and institutions, based on a long history of discrimination, is a real and legitimate barrier to traditional public health initiatives that must be overcome with community involvement.[89]

Since 1989, Centro Hispano in Madison has provided AIDS/HIV education services to the Hispanic population of Dane County. Services provided include community outreach; free, anonymous, drop-in testing; pre- and post-test counseling; oral presentations to schools and community groups; support groups; distribution of literature at health fairs and neighborhood fairs; home parties; and one-on-one discussions. All services are provided in both Spanish and English, as needed. Evidence of program success includes: pre- and post-test evaluation has shown increased knowledge after oral presentations, the numbers of people being tested has increased, the numbers of informational brochures distributed has increased, and anecdotal evidence suggests that awareness has increased.

Another example of a Wisconsin program that is seeking to prevent HIV/AIDS at the community level is the Menominee AIDS Project. Since September 1987, the Menominee County/Reservation AIDS Task Force has developed strategies and made recommendations for a coordinated, comprehensive county- and reservation-wide effort to prevent and control AIDS and HIV infections and to meet the needs of persons affected by this community health problem. Among its activities, the project seeks to identify and define existing resources, share experiences and information, coordinate AIDS care and prevention programs, and identify service gaps and needs. While surveys indicate that project efforts have been successful in educating the public about AIDS, other information indicates that additional efforts are needed to change behaviors.

The Great Lakes Inter-Tribal Council sponsors the AIDS/HIV Prevention Project, formed in response to a national finding that Native Americans have the highest rate of increase in HIV infection when compared to other racial/ethnic groups. With Department of Health and Social Services funding during the past three years, the Project has attempted to inform Native American people of the risks through statewide conferences, a seasonal newsletter, workshops for hard-to-reach "high-risk" groups, provision of ongoing information, and educational materials provided to each tribe.

Sources of primary health care are also important in AIDS prevention. For example, the Milwaukee Indian Health Board offers health promotion/disease prevention activities as well as intervention and immediate care. HIV/AIDS case management services are offered as part of the health care provided by this community health center; services are offered at a northside and a southside location in Milwaukee.

In the mid-1980s, the Beloit Inner City Council on Substance Abuse began providing information and referral services to individuals from space donated by a local community church; in June 1987 the organization moved to its present Merrill community location. In May 1992 the name was changed to the Beloit Inner City Council, Inc., to reflect the expansion of services provided. One of the important services the Council currently provides is HIV/AIDS outreach, including: education/referral and treatment; presentations to churches, hospitals, and schools; street outreach; home visits; condoms and safe sex education; support groups; and confidential counseling.

United Migrant Opportunity Services, Inc. (UMOS), the largest Hispanic organization in Wisconsin, has been an active participant in the provision of AIDS/HIV prevention, education and intervention services in Wisconsin's multi-cultural communities. The UMOS's Multi-cultural Women's AIDS Project, a statewide AIDS/HIV/STD prevention education project targeted to Hispanic, American Indian and Hmong adolescents and women of childbearing years, is funded by the AIDS/HIV Program. The project has utilized innovative outreach methods such as presentations in beauty salons; Women, Infants and Children (WIC) clinics; and home parties. In addition, alternative and traditional school outreach as well as community organization outreach activities have been initiated. Through its four years, the project has provided comprehensive AIDS/HIV/STD outreach to over 12,000 clients, and trained over 3,000 persons in 120 minority-based organizations statewide.

The Opportunities Industrialization Center of Racine County, Inc., (OIC) provides AIDS/HIV prevention education throughout Racine and Kenosha county communities. In 1990, OIC established its HIV/AIDS Education and Prevention Program with federal funds awarded as a secondary grant from the Wisconsin Division of Health, AIDS/HIV Program. OIC targets its AIDS/HIV prevention efforts toward in-school and out-of-school high-risk minority youth, both African American and Hispanic; women of color in the minority communities of Racine and Kenosha; and young African American and Hispanic fathers. OIC seeks to be innovative and culturally specific with all of its education/prevention messages and does not refuse anyone's request for a HIV/AIDS presentation.

The Wisconsin Association of Black Social Workers, Inc., (WABSW) has been active in the provision of AIDS/HIV prevention education since 1989. The initiatives were started because of concern about the impact this disease was having on the African American community. WABSW's AIDS/HIV prevention project is targeted at African Americans residing in Milwaukee. As part of its efforts, the project has trained and certified about 60 adult African Americans as AIDS/HIV educators, on topics including AIDS/HIV, alcohol and other drug abuse, and sexually transmitted diseases. Health educators conduct informational sessions at community agencies and organizations and distribute literature at various community cultural events. WABSW developed and implemented a training and certification program designed specifically for teens, in which teens complete 24 hours of intensive training that covers self-esteem, human sexuality, AODA and AIDS/HIV. The project has trained and certified about 20 African American teens who conduct educational sessions in the community and schools.

The Milwaukee Chapter of the National Black Nurses Association recently concluded a successful federally-funded project to conduct AIDS/HIV education in the black community. The Project, "Preventing AIDS in Milwaukee's Black Childbearing Group," included the following goals: development of culturally sensitive educational materials; education of African American persons, both males and females, in the 15-54-year age group; education of professionals; education of the general community; and development of a speaker's bureau for AIDS/HIV education activities. The Milwaukee Chapter is continuing its AIDS/HIV educational efforts in the African American community.

The Madison Urban League has organized an AIDS/HIV prevention program that focuses its activities toward the African American community. Funded in July 1989, the program's activities have included information booths and displays that distribute culturally specific literature at community events and agencies frequented by racial/ethnic minorities. Project staff have visited neighborhood centers and spoken to small groups of students, attended neighborhood festivals and ethnic events such as Black History programs and churches. The program has also been innovative in developing unique methods for reaching populations at very high risk who would not ordinarily seek information from outreach workers. Through identifying informal leaders in some isolated neighborhoods, staff have held "in-home gatherings" for residents. Persons who attend can receive information and ask questions that may lead to referrals for testing and treatment facilities. Communication is then maintained with the informal leaders and the "in-home gatherings" are repeated as needed.

Tuberculosis

Tuberculosis (TB), an increasing public health problem in the United States, is an infectious disease that is most often associated with crowded living conditions and poverty. The downward trend in the number of tuberculosis cases among the general U.S. population in the early 1980s was reversed in 1986. This reversal was related to adverse social and economic factors, the HIV epidemic, and immigration of persons with tuberculosis infection.

National Findings

In 1990, 69 percent of the 25,701 reported tuberculosis cases in the United States occurred among racial/ethnic minorities. Among children less than 15 years of age, 86 percent of reported TB cases occurred among racial/ethnic minorities.[90]

In 1990, the risk of TB (compared with the case rate of 4 per 100,000 population among whites) was 9.9 times higher for Asians/Pacific Islanders, 7.9 times higher for non-Hispanic blacks, 5.1 times higher for Hispanics, and 4.5 times higher for American Indians/Alaskan Natives.

Of the 25,701 cases reported nationally in 1990, 9,381 occurred among persons aged less than 35 years. Cases in this age group are considered potentially preventable by administration of preventive therapy to infected persons who have not yet developed disease. Eighty-five percent of potentially preventable cases occurred among racial/ethnic minorities.

Wisconsin Findings

Of the 111 new cases of TB reported to the Wisconsin Division of Health in 1991, 74 were classified by race as white, 26 as black, 2 as American Indian, and 9 as Asian or Pacific Islander. Expressed as rates (cases per 100,000 population), these reported cases represent 2 cases per 100,000 for whites, 11 per 100,000 for blacks, 5 per 100,000 for American Indians, and 17 per 100,000 for Asians/Pacific Islanders (based on 1990 census counts).

Programs

The Wisconsin Tuberculosis Program is a permanent program within the Communicable Disease Section of the Bureau of Public Health, directed by a Federal TB Advisor who oversees surveillance, reporting, and case management of persons found to have active tuberculosis. Funding for this program is provided jointly through an annual cooperative agreement with the Centers for Disease Control and Prevention and by state funds.

By statutory mandate, the state provides funds for the purchase and distribution of tuberculosis drugs to individuals being treated for active tuberculosis or receiving tuberculosis preventive therapy. The state also provides funds to reimburse designated dispensaries within the state for clinic and nursing visits. TB skin testing is available through local health agencies throughout the state.

Special TB initiatives within the state include enhanced prevention and control services among both high incidence and high-risk populations in southeast Wisconsin. For example, the state employs outreach workers to provide home visits for directly observed therapy (DOT) among the Indochinese population and among non-compliant individuals identified as requiring treatment for TB infection or TB disease.

These outreach workers employ strategies such as providing transportation, food, or other incentives and enablers to ensure that patients adhere to and complete prescribed therapy regimens.

In addition to DOT, the Wisconsin TB Program employs an individual to coordinate and direct TB activities among Wisconsin residents infected with HIV and those at risk of HIV infection. This individual works with AIDS Service Organizations and drug treatment facilities to prevent clinical TB from developing among injecting drug users and members of other groups with a high prevalence of tuberculosis infection who are also at risk for HIV infection; activities include implementing TB skin testing and facilitating completion of preventive therapy among these individuals.

Finally, the Wisconsin Tuberculosis Program provides and promotes educational information provided by the Centers for Disease Control's Advisory Council for the Elimination of Tuberculosis. These materials recommend the following steps to eliminate TB in U.S. communities with at-risk racial/ethnic minorities:

- initiating public awareness campaigns to alert these communities about the increasing TB problems;
- training and educating public and private health care providers in the skills needed to relate effectively to the at-risk communities being served;
- empowering at-risk populations with knowledge and other resources needed to influence the TB programs directed toward their communities;
- building coalitions to help design and implement intensified community TB prevention and control efforts;
- intensifying the screening of at-risk populations for TB and tuberculosis infection and providing appropriate treatment and preventive therapy;
- increasing the speed and completeness with which all health care providers report confirmed and suspected TB cases to appropriate health departments; and
- improving the availability and quality of TB health care services in socioeconomically disadvantaged areas.

Hepatitis B

Hepatitis B, caused by the hepatitis B virus (HBV), is an infectious disease that primarily affects the liver. HBV is associated with a wide spectrum of liver disease, from an asymptomatic carrier state, to acute hepatitis (liver inflammation), cirrhosis, and primary liver cancer. Hepatitis B is a perinatal risk since women with circulating hepatitis B surface antigen (HBsAg) can transmit HBV to the newborn. Without intervention, from 80 to 90 percent of infants born to mothers with HBsAg and hepatitis Be antigen will become infected, and approximately 90 percent of these infected infants will become chronic carriers of HBV. Besides transmitting the HBV, about 25 percent of chronic carriers die of cirrhosis or primary liver cancer.[91]

National Findings

In the United States, most persons acquire HBV infection as adolescents or adults through sexual exposure or injecting drug use. The risk of developing chronic HBV infection is age-dependent: it ranges from 6-10 percent of persons who acquire HBV infection as adults to 90 percent of persons who acquired HBV infection as infants. Annually, there are an estimated 200,000-300,000 new infections in the United States; additionally, an estimated one million persons have chronic HBV infection and are potentially infectious to others.

Wisconsin Findings

In 1991, 800 cases of acute, chronic, and unspecified hepatitis B were reported to the Wisconsin Division of Health. By race, 191 cases (or 24 percent) occurred in whites, 186 cases (23 percent) in blacks, 3 cases (0.4 percent) in American Indians, and 168 cases (21 percent) in Asians or Pacific Islanders. (In addition, 245 cases were of unspecified race and 7 cases were listed as "other.")

Programs

The following three programs in the Wisconsin Division of Health address HBV prevention in Wisconsin. The Wisconsin Perinatal Hepatitis B Prevention Program identifies pregnant women with acute and chronic HBV infections and initiates and completes hepatitis B immunization of their infants and susceptible household contacts. The Universal Infant Hepatitis B Immunization Program provides hepatitis B vaccine to local public health agencies. Use of the vaccine is currently restricted to initiating or continuing and completing the 3-dose HB vaccine series in infants 0-15 months of age. Finally, the Refugee Health Program works with the Immunization Program to provide hepatitis B vaccine to eligible susceptible new refugee arrivals from countries where HBV infection is endemic.

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OLDER ADULTS

Introduction

Life expectancies among persons who attain the age of 65 in the United States have been increasing, especially among the "oldest old," those 85 years of age and over. For many, these longer life expectancies mean a longer period of relatively worry-free retirement; however, the longer lifespan can also eventually mean a number of years living with chronic conditions that threaten independence. As many people live into their eighties and beyond, more individuals and families will face the challenges and losses of age-associated conditions.

The 65-and-over population as a whole is more varied than any other age group in the population. Many people in their sixties and seventies are as vigorous and capable as they were in their forties and fifties. Mental acuity, once thought to decline naturally with increasing age, has been shown to persist into the oldest of old ages when dementia or other disease is not present. Studies are providing evidence that much of what used to be called "normal aging" (stiffness, muscle weakness and atrophy, loss of lung capacity, decline in mental faculties) is actually the result of curtailing activity, mental and physical: the "disuse" syndrome. "Use it or lose it" has become the motto of many healthy older people. Health at older ages thus partly reflects the activities and attitudes established and practiced over a lifetime.

Still, many health problems can limit activity or choices in old age, including heart disease, chronic lung disease, arthritis, vision and hearing impairments, and cerebrovascular disease. Many older adults have more than one chronic health problem, complicating the management of each disorder. Prescribed medications, such as prescription drugs to control high blood pressure, can present their own difficulties and require persistence in finding the best combination of medications and learning to manage their use.

In many minority families, the importance of older family members--grandparents, aunts, uncles, neighbors, and godparents--cannot be overestimated. Older minority adults are valued members of their families and communities. Yet they face great problems as they age; one is the high rate of poverty. Older adults generally experience a major decline in income after retirement, which causes stress and often markedly affects the quality of life. Minorities have higher rates of poverty in old age; in particular, elderly minority women generally experience the most severe income deprivation.[1] 1990 U.S. Census data for Wisconsin found strikingly higher poverty rates among older African Americans, American Indians, Asians, and Hispanics compared with all persons 65 and older in the state (see discussion of poverty in the population characteristics chapter).

A problem related to poverty is the affordability of medical care. Many minority elderly must depend solely on Medicare to pay for health services, and cannot afford supplemental insurance to help pay for services not covered. Acute-care services not covered by Medicare include outpatient prescription drugs, routine physical examinations, non-surgical dental services, hearing aids, and eyeglasses; elderly persons without supplemental insurance also must pay out-of-pocket for all Medicare co-payments and deductibles.[2] While the poorest elderly qualify for Medical Assistance, about 22 percent of all U.S. persons aged 65 and over who have a household income of less than $14,000 per year do not qualify for Medical Assistance and must depend solely on Medicare.[3]

Heart disease, cancer, and stroke are the leading causes of death and hospitalization in the elderly. Some important causes of morbidity not adequately reflected in mortality or hospital statistics include functional impairments, sensory deficits, and cognitive losses. As with health problems among younger adults, many conditions common in the elderly occur more frequently and with greater severity among minorities.

This chapter presents findings about leading causes of death and illness in the Wisconsin population aged 65 and over. Findings from the U.S. census about living arrangements and poverty rates among minority elderly persons are in the chapter on population characteristics.

LEADING CAUSES OF MORTALITY AND MORBIDITY

HEART DISEASE

CANCER

STROKE

DIABETES

Heart Disease

During the years 1987-1991, heart disease was cited as the cause of death for more Wisconsin residents age 65 and over than any other cause. Coronary heart disease (ischemic heart disease) is the most commonly experienced form of heart disease (see heart disease discussion in the preceding chapter). Prevention of heart attacks and other potentially lethal or disabling manifestations of heart disease is possible even at older ages. Smoking cessation, blood pressure screening and control, diabetes management, and activity programs are all ways in which older adults can reduce their risk of disability or death from heart disease.[4]

National Findings

Nationally in 1988, heart disease (all forms) was the leading cause of death among older adults (age 65 and over) in every racial and ethnic group examined: Hispanic, Asian/Pacific Islander, American Indian/Alaskan Native, black, and white. The heart disease death rate in 1988 was lowest for Asian elderly, about 60 percent lower than the rate for white persons. For Hispanic and American Indian older adults, the death rates from heart disease were about 34-45 percent below the rate for whites. Heart disease mortality for black persons aged 65+ was about 5 percent higher than for white persons aged 65+.[5]

Wisconsin Findings

Overview. As among younger adults, males aged 65 and over have higher rates of coronary heart disease mortality than do women (Table 1); however, the difference becomes less marked in successively older age groups. Coronary heart disease mortality rises steeply with age.

Table 1. Age-Specific Rates of Death* from Coronary Heart Disease Among Total Wisconsin Population Aged 65 and Older, By Sex, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	1,761	984	2,322	5,486
Females	1,274	418	1,336	4,343
Total	1,472	671	1,713	4,668

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.

Comparing all persons aged 65 and over, the coronary heart disease mortality rate was lower among American Indian, African American, and Hispanic persons than in the total population (Figure 1).[a] (There were too few CHD deaths among Asians aged 65 and over to present a rate.) This overall comparison, however, masks higher rates in some age subgroups, especially among the youngest elderly.

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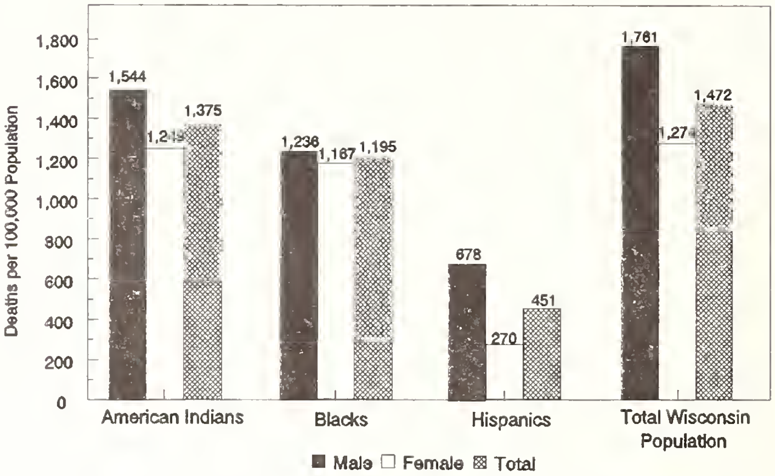
[a] The mortality and hospitalization rates presented in this chapter are age-specific rates for the 65-and-over population (that is, the actual number of deaths or hospitalizations per specified number of population). The preceding chapter presented age-specific rates for the population aged 18-64; it also presented the total (all ages) age-adjusted rates for each of the health conditions discussed. For example, the age-adjusted diabetes mortality rate among Hispanics included all deaths attributed to diabetes among Hispanics, adjusted to account for the difference in age structure between Hispanics and the total Wisconsin population.

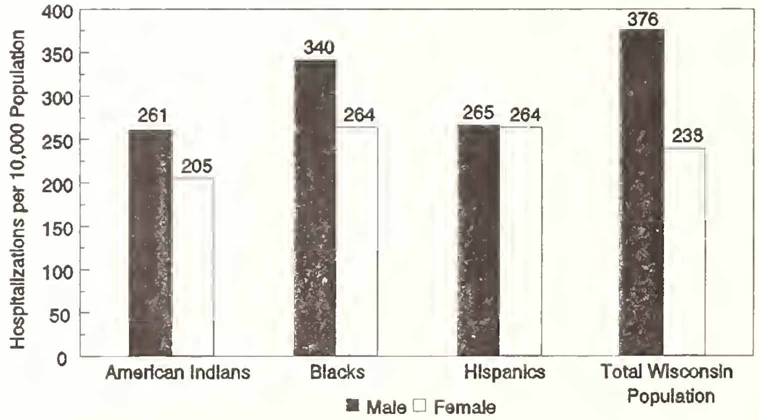
Figure 1. Age-Specific Rates of Death from Coronary Heart Disease
Among Persons Aged 65 and Older,
By Race/Ethnicity and Sex, Wisconsin 1987-1991



Note: Based on deaths in the age group attributed to coronary heart disease (ICD-9 Codes 410-414). There were too few deaths among Asians to calculate rates. Racial groups exclude Hispanics.
Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Black women aged 65-74 and 75-84 died from CHD at a markedly higher rate than did all women in these age groups. The CHD mortality rate among black males aged 65 and over was lower than the rate among all males 65 and over, at least partly owing to higher rates of premature heart disease mortality in younger (less than 65 years of age) black men. Hospitalization rates were higher among black women and lower among black men, compared with all women and men aged 65 and older (Figure 2).

Figure 2. Age-Specific Rates of Hospitalization for Coronary Heart Disease Among Persons Aged 65 and Older,
By Race/Ethnicity and Sex, Wisconsin 1990-1992



Note: Based on a principal diagnosis at discharge of coronary heart disease (ICD-9-CM 410-414). Too few hospitalizations with this diagnosis occurred among Asians to calculate a rate. Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

Among older American Indians in Wisconsin, both men and women in the "youngest-old" group (aged 65-74) had higher rates of CHD mortality than the total population 65-74. CHD hospitalization rates for American Indian elders of both sexes were lower than in the general population.

Although rates of death from coronary heart disease appeared to be lower in the Hispanic older population compared with all older persons in Wisconsin, rates of hospitalization were more similar. In fact, Hispanic women aged 65 and over had a higher hospitalization rate for CHD than did all women in the age group.

There were too few deaths and too few hospitalizations among Asian older persons to report rates of death or hospitalization from coronary heart disease.

African Americans. In 1987-1991, elderly African American women experienced higher rates of mortality from coronary heart disease than the all-races female population; the difference was especially marked in the youngest elderly group (Table 2; Figures 3, 4, 5). Black women aged 65-74 had an age-specific rate of death from coronary heart disease (672 per 100,000) that was 1.6 times the rate among all women in this age group (418 per 100,000). Among women aged 75-84, the death rate among black women (1,398 per 100,000) was more similar to the rate among all women in the age group (1,336). Black women aged 85 and over experienced a rate of death from coronary heart disease (3,992 per 100,000) lower than the rate for the total population of women in this age group (4,343).

Table 2. **Age-Specific Rates of Death* from Coronary Heart Disease Among Blacks Aged 65 and Older, Wisconsin 1987-1991**

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	1,236	752	1,914	4,219
Females	1,167	672	1,398	3,992
Total	1,195	707	1,583	4,063

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.

Black men aged 65 and over died from coronary heart disease at a lower rate than did all men in the age group. Unfortunately, this lower death rate at least partly reflects the higher death rates from heart disease at younger ages among black men (see the previous chapter). All age subgroups of older black men had death rates from coronary heart disease lower than comparable rates in the total male population. For example, black men aged 65-74 died from coronary heart disease at a rate (752 per 100,000) that was about 80 percent of the rate found among all men aged 65-74 (984 per 100,000).

In 1990-1992, older black men in Wisconsin had an age-specific rate of hospitalization for coronary heart disease about 90 percent of the rate among all men aged 65 and over (340 hospitalizations per 10,000 population, vs. 376 per 10,000). In contrast, black women aged 65 and over had a higher age-specific rate of hospitalization for coronary heart disease than did the total population of older women (264 vs. 238 per 10,000). By age subgroup, the rate of CHD hospitalizations was 274 per 10,000 among blacks aged 65-74, and 333 per 10,000 among black persons aged 75 and older.

American Indians. Although data for 1987-1991 suggest that coronary heart disease death rates among American Indians aged 65 and over were lower overall than in the total older population (Figure 1), this overall comparison disguises important differences within older age subgroups.

Among American Indians aged 65-74, both men and women died from coronary heart disease at higher rates than the comparable all-races rates. The age-specific death rate among American Indian men aged 65-74 (Table 3; Figures 3, 4, 5) was about 1.3 times the rate for all men in the age group (1,246 per 100,000 compared with 984 per 100,000). The difference was even more marked among women: American Indian women aged 65-74 died from coronary heart disease at 1.8 times the rate among all women in the age group (736 vs. 418 per 100,000). In the age group 75-84, Indian men died at a rate similar to that for all men (2,294 vs. 2,322 per 100,000); but Indian women aged 75-84 died at 1.2 times the rate among all women in the age group (1,630 vs. 1,336 per 100,000). There were too few deaths among American Indians aged 85 and over to report rates separately for men and women, but the overall 85-plus rate was lower than in the general population.

Table 3. Age-Specific Rates of Death* from Coronary Heart Disease Among American Indians Aged 65 and Older, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	1,544	1,246	2,294	**
Females	1,249	736	1,630	**
Total	1,375	967	1,877	2,941

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

In 1990-1992, American Indian men aged 65 and over were hospitalized with a principal diagnosis of coronary heart disease at a lower age-specific rate than were all older men (261 vs. 376 per 10,000 population). American Indian women aged 65 and over also had a lower CHD hospitalization rate compared to older women as a whole (205 vs. 238 per 10,000).

Hispanics. Based on death certificate data for 1987-1991, Hispanics aged 65 and over died from coronary heart disease at an age-specific rate that was about 30 percent of the rate among all persons 65 and over. Among Hispanic men aged 65 and over, the age-specific rate of death (Table 4) was about 40 percent of the rate among all Wisconsin men aged 65 and over. Hispanic women aged 65 and over died from coronary heart disease at an age-specific rate that was about 20 percent of the rate among all women aged 65 and over. Rates within age subgroups of the older Hispanic population appeared similarly low (Figures 3, 4, 5).

As noted in the chapter on adults ages 18-64, Hispanic mortality rates based on Wisconsin death certificate data appear to be artificially low (compared with national findings). Underreporting of Hispanic ethnicity on death certificates probably accounts for at least a portion of the difference.

Table 4. **Age-Specific Rates of Death* from Coronary Heart Disease Among Hispanics Aged 65 and Older, Wisconsin 1987-1991**

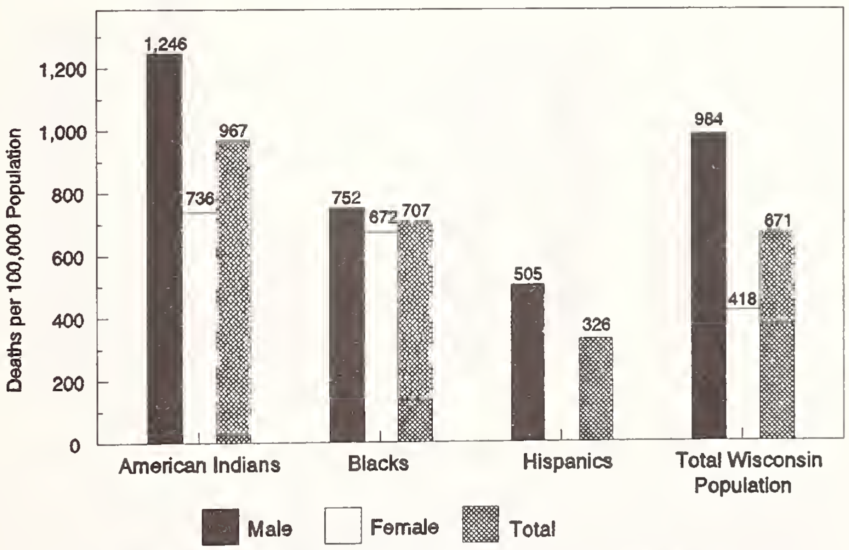
	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	678	505	**	**
Females	270	**	**	**
Total	451	326	546	1,504

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths occurred in the 5-year period; no rate was calculated.

Hospitalization data for older Hispanics in Wisconsin reveal a somewhat different picture than do the mortality rates. Based on hospital data for 1990-1992, Hispanic men aged 65 and over had a lower rate of hospitalization for coronary heart disease than did the total population of 65-and-over males; in contrast, Hispanic women aged 65 and over had a higher CHD hospitalization rate compared with all women in the age group. The age-specific rate of hospitalization for CHD among Hispanic men aged 65 and over was 265 per 10,000 population, about 70 percent of the rate among all older men. Among Hispanic women aged 65 and over, the CHD hospitalization rate was 264 per 10,000, about 1.1 times the rate for all women in the age group.

Asians. Among Asians 65 and over, there were too few deaths attributed to coronary heart disease during the five-year period 1987-1992 (an average of 3 deaths per year) to report a mortality rate. Similarly, the number of hospitalizations with a principal diagnosis of coronary heart disease (an annual average of 10 hospitalizations) was too small to report a hospitalization rate.

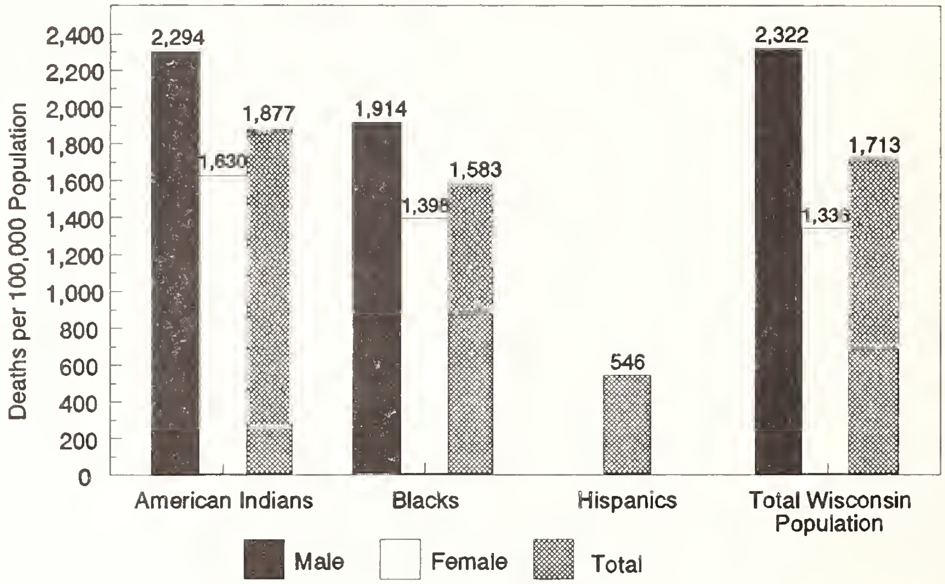
Figure 3. Coronary Heart Disease Mortality Rates, Wisconsin 1987-1991: Persons Aged 65-74



Note: Fewer than 20 deaths attributed to CHD occurred among Hispanic females and Asians aged 65-74; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

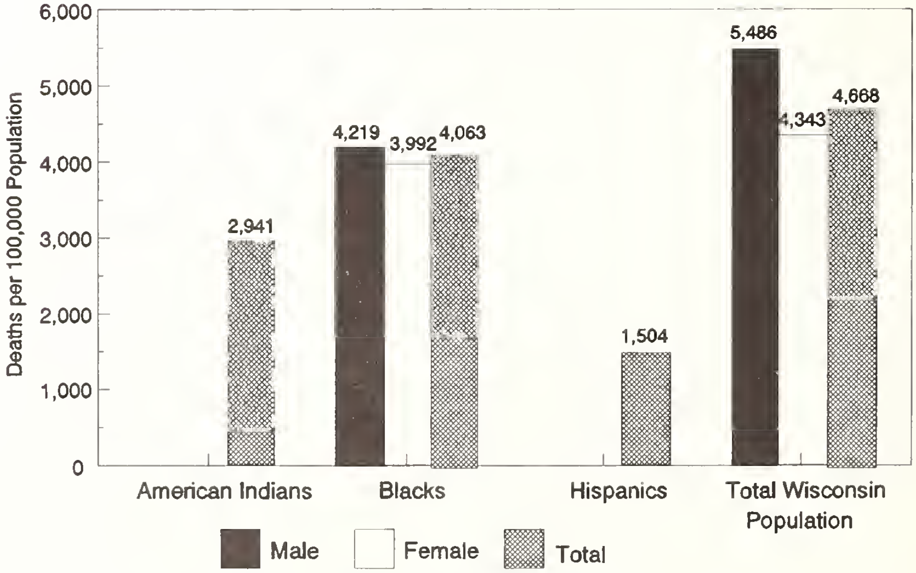
Figure 4. Coronary Heart Disease Mortality Rates, Wisconsin 1987-1991: Persons Aged 75-84



Note: Fewer than 20 deaths attributed to CHD occurred among all Asians aged 75-84; no rates are presented. There were also too few deaths to present sex-specific rates for Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Figure 5. Coronary Heart Disease Mortality Rates, Wisconsin 1987-1991: Persons Aged 85+



Note: Fewer than 20 deaths attributed to CHD occurred among Asians aged 85+; no rates are presented. There were also too few deaths to present sex-specific rates for American Indians and Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Cancer

Cancer (malignant neoplasms of all sites) remains the second leading cause of death and chronic illness among older adults in the United States. (See the discussion of cancer in the preceding chapter.) The majority of deaths from cancer occur after the age of 65. A number of cancers in older adults are amenable to secondary prevention, that is, early detection and treatment. These include cancers of the breast, cervix, uterus, skin, rectum, colon, and prostate.

For many kinds of cancer, early recognition can lessen the invasiveness of treatment needed and increase the likelihood of cure. An example is cervical cancer, which is readily detected by pelvic exam and Pap smear. Early lesions can be cured simply by local excision, freezing, cautery, or laser therapy. More advanced lesions require more extensive surgery and radiation and/or chemotherapy.

National Findings

In 1988, death rates for cancer (total for all sites) were lowest for Asian older persons, followed by American Indian and Hispanic older persons. The rate for Asians was nearly 50 percent lower, for American Indians about 45 percent lower, and the rate for Hispanics was nearly 40 percent lower than the rate for white persons. Cancer mortality for black persons aged 65 and over was 17 percent higher than for white persons.[6]

Wisconsin Findings

Overview. Among Wisconsin residents who were 65 years of age and older during the years 1987-1991, males had a markedly higher rate of death from cancer than did females (Table 5). Much of this difference can be attributed to the historically higher rates of smoking among men.

Even after age 65, cancer death rates increase with age, although not as steeply as rates of death from coronary heart disease.

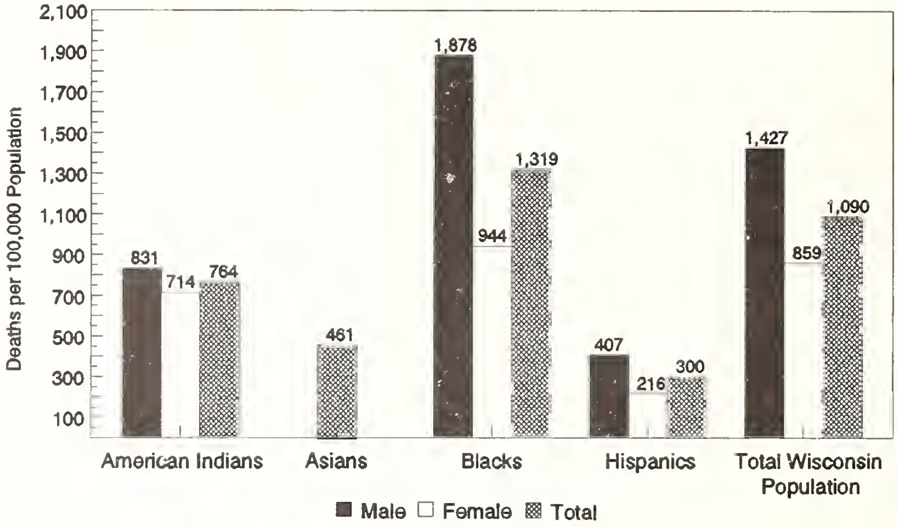
Table 5. Age-Specific Rates of Death* from Cancer Among Total Wisconsin Population Aged 65 and Over, 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	1,427	1,050	1,836	2,688
Females	859	640	981	1,372
Total	1,090	824	1,307	1,746

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.

Compared to cancer mortality rates in the total 65-and-over population of Wisconsin, cancer mortality in 1987-1991 was lower among American Indian, Asian, and Hispanic older persons, and higher among African American older persons (Figure 6). By age subgroup, elderly African American men had higher cancer mortality than elderly men as a whole in two age subgroups: 65-74 and 75-84; only at ages 85 and above did the cancer mortality rate among all men in the age group surpass the rate among black men. African American women had higher cancer mortality rates in every age subgroup of the older population, compared with all women in these age groups.

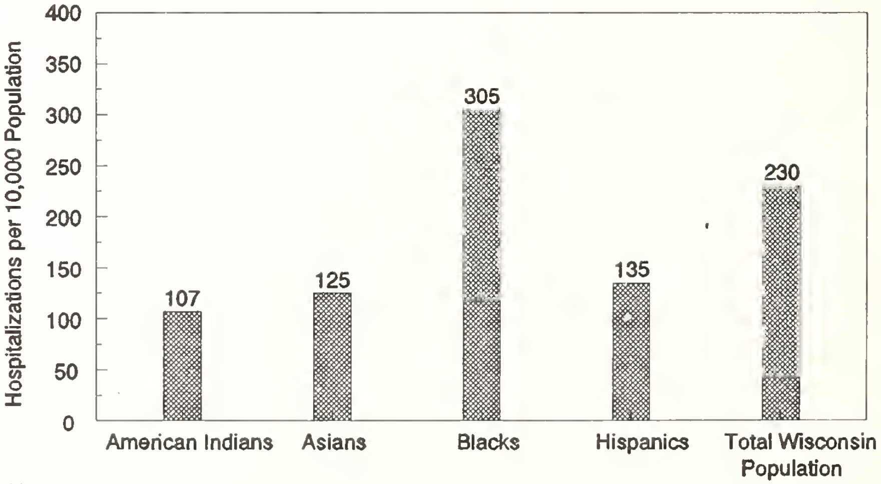
Figure 6. Age-Specific Rates of Death from Cancer Among Persons Aged 65 and Older, By Race/Ethnicity and Sex, Wisconsin 1987-1991



Note: Racial groups exclude Hispanics.
Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Findings on cancer hospitalizations showed higher age-specific rates of cancer hospitalization for black elderly persons, and lower rates for American Indians, Asians, and Hispanics, compared with the total 65-and-over population (Figure 7).

Figure 7. Age-Specific Rates of Hospitalization for Cancer Among Persons Aged 65 and Older, By Race/Ethnicity, Wisconsin 1990-1992



Note: Racial groups exclude Hispanics.
Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

African Americans. Death certificates for the years 1987-1991 suggest that older black adults (aged 65 and over) of both sexes had a higher death rate from cancer than did the total Wisconsin population aged 65 and over. The age-specific cancer mortality rate among black men aged 65 and over was 1,878 deaths per 100,000 population (Table 6), or 1.3 times the comparable all-races rate. Among black women in this age group, the age-specific mortality rate from cancer was 944 per 100,000, or 1.1 times the all-races rate among women.

Table 6. Age-Specific Rates of Death* from Cancer Among Blacks Aged 65 and Over, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	1,878	1,607	2,488	2,532
Females	944	802	1,075	1,521
Total	1,319	1,148	1,583	1,835

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.

The higher cancer mortality rates among older African Americans in Wisconsin were most marked in the "youngest elderly" group (Figures 8, 9, 10). Among black men aged 65-74, the rate of death from cancer was 1,607 per 100,000, or 1.5 times the rate for all men in the age group. The rate among black women aged 65-74 was 802 per 100,000, or 1.3 times the total rate for women in the age group. At ages 75-84, black men died from cancer at the rate of 2,488 per 100,000, or 1.4 times the rate for all men at these ages. Black women aged 75-84 had a mortality rate from cancer of 1,075 per 100,000, which was 1.1 times the rate found among all Wisconsin women in this age group. At the oldest ages (85 and older), cancer death rates among black men were lower than the rate for all men in this age group (2,532 vs. 2,688 per 100,000); but the cancer mortality rate among black women aged 85 and over was higher than that for all women aged 85+ in the state (1,521 vs. 1,372 per 100,000).

Consistent with the comparatively high mortality rates, hospitalization data for the years 1990-1992 in Wisconsin suggest that blacks aged 65 and over had a higher rate of hospitalization for cancer than did the 65-and-over population as a whole. The age-specific rate of cancer hospitalization among blacks (men and women combined) aged 65 and over was 305 per 10,000, or about 1.3 times the rate in the total 65-and-over population (Figure 7). Two age subgroups of the older black population in Wisconsin also had higher cancer hospitalization rates: blacks aged 65-74 had a hospitalization rate 1.4 times the rate in the age group as a whole; at ages 75 and over, the differential was 1.3.

American Indians. For both men and women, age-specific cancer mortality rates among older American Indians were lower than the all-races rates. Among American Indian men aged 65 and over, the mortality rate from cancer during 1987-1991 was 831 per 100,000 (Table 7), or about 60 percent of the rate for all men in the age group. The age-specific rate of death from cancer among American Indian women aged 65 and over (714 per 100,000) was 83 percent of the rate for all women in the age group. Cancer mortality rates for age subgroups of the 65-and-over population among American Indians appeared lower than in the general population (Figures 8 and 9).

Table 7. Age-Specific Rates of Death* from Cancer Among American Indians Aged 65 and Over, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	831	712	**	**
Females	714	589	**	**
Total	764	645	853	**

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths occurred in the 5-year period; no rate was calculated.

Among American Indians aged 65 and older, the rate of hospitalizations with a principal diagnosis of cancer was considerably lower than the rate for this age group as a whole (Figure 7). Among American Indians (both sexes combined), the age-specific rate of cancer hospitalizations during 1990-1992 was 107 hospitalizations per 10,000 population; this was about half the rate of cancer hospitalizations among the total population aged 65 and over.

Hispanics. Rates of mortality derived from 1987-1991 death certificates suggest that older Hispanics died from cancer at about 30 percent of the rate found in the general older population in Wisconsin (Table 8; Figure 6). It is not known to what extent an underreporting of Hispanic ethnicity on death certificates contributes to this apparently lower rate.

Table 8. Age-Specific Rates of Death* from Cancer Among Hispanics Aged 65 and Over, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	407	404	**	**
Females	216	**	**	**
Total	300	326	**	**

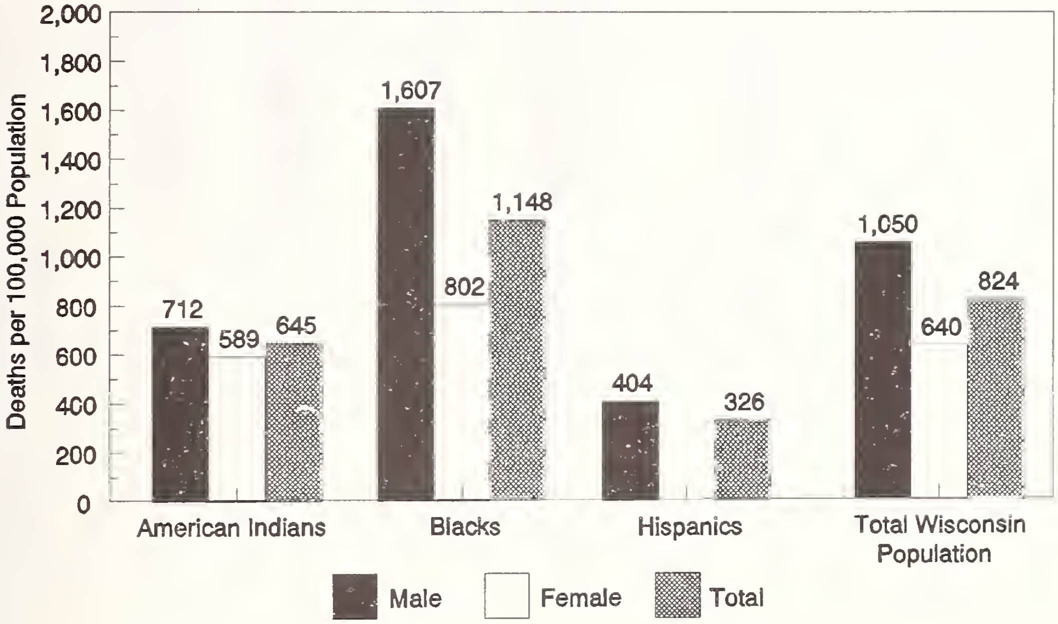
Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths occurred in the 5-year period; no rate was calculated. (No deaths from cancer were reported among Hispanics aged 85 and older.)

In 1990-1992, hospitalizations with a principal diagnosis of cancer occurred among older Hispanics in Wisconsin at the age-specific rate of 135 hospitalizations per 10,000 Hispanics aged 65 and over, or about 60 percent of the rate found in the total older population (Figure 7). At ages 65-74, Hispanics were hospitalized for cancer at a rate (154 per 10,000) that was about 75 percent of the rate for all persons in this age group. At ages 75 and above, the cancer hospitalization rate among Hispanics (102 per 10,000) was about 40 percent of the rate for all persons ages 75 and older.

Asians. Among Asians aged 65 and older, the age-specific rate of cancer mortality during 1987-1992 was 461 deaths per 100,000 population, about 40 percent of the rate in the total 65-and-over population (Figure 6). There were too few deaths to analyze them separately for men and women, or for age subgroups within the older Asian population.

Hospitalization data for 1990-1992 indicate that Asians aged 65 and over in Wisconsin were hospitalized with a principal diagnosis of cancer at the age-specific rate of 125 per 10,000 population (Figure 7), or about 54 percent of the rate for all persons aged 65 and over. Although based on a small number of hospitalizations, the rate for the oldest age group examined (75 and over), 243 hospitalizations per 10,000 persons in the age group, appeared to be more similar to the rate for the age group as a whole (256 per 10,000). (There were too few hospitalizations in the 65-74-year age group to present a rate.)

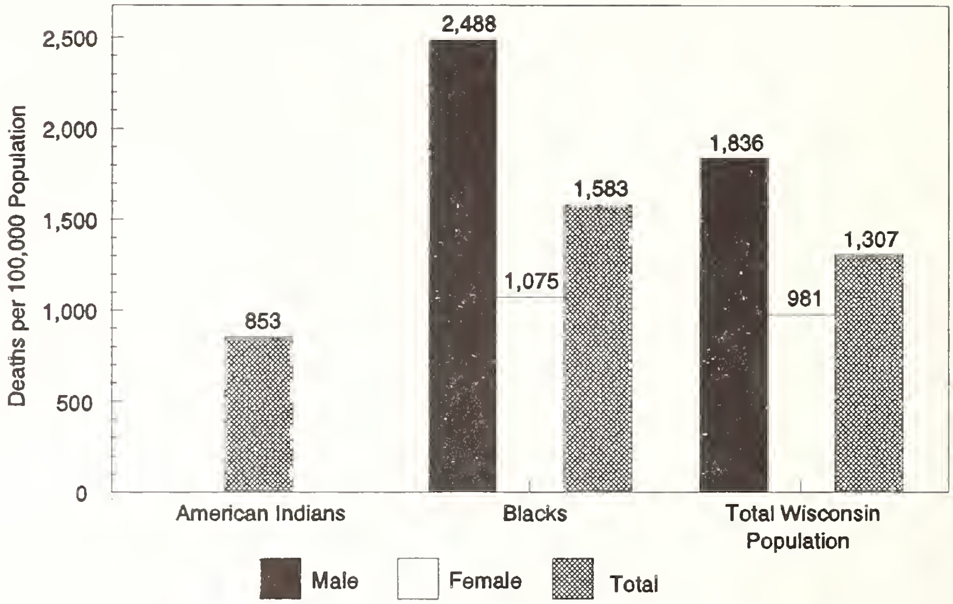
Figure 8. Cancer Mortality Rates, Wisconsin 1987-1991: Persons Aged 65-74



Note: Fewer than 20 deaths attributed to cancer occurred among Hispanic females and Asians aged 65-74; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

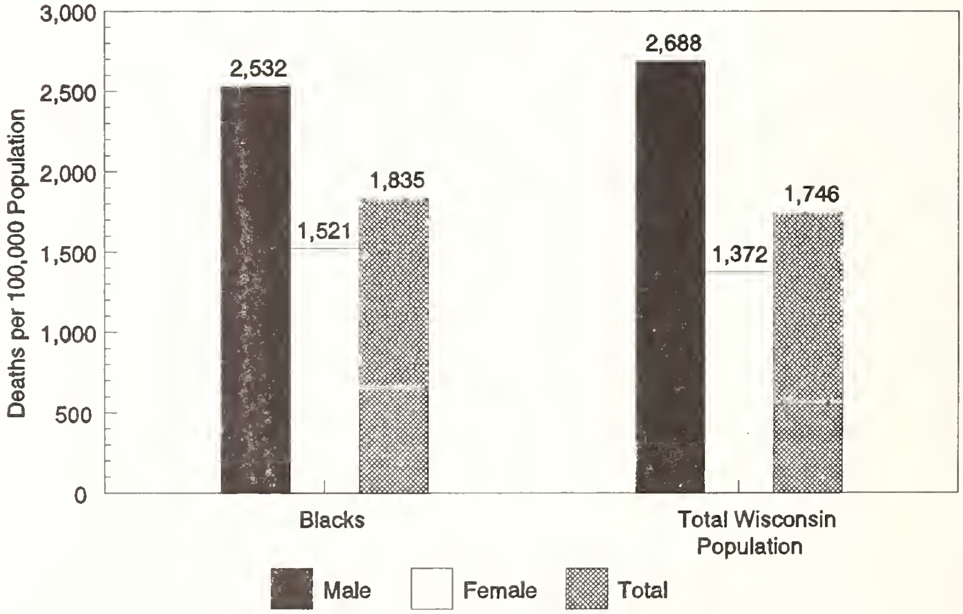
Figure 9. Cancer Mortality Rates, Wisconsin 1987-1991: Persons Aged 75-84



Note: Fewer than 20 deaths occurred among American Indian males, American Indian females, all Hispanics and all Asians aged 75-84; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Figure 10. Cancer Mortality Rates, Wisconsin 1987-1991: Persons Aged 85 and Older



Note: Fewer than 20 deaths attributed to cancer occurred among Hispanics, Asians, and American Indians aged 85 and older; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Stroke

Stroke (cerebrovascular disease) is a major cause of disability and death in the 65-and-over population. Its chief risk factor is hypertension, or high blood pressure, which affects from 60 to 80 percent of people between the ages of 65 and 75 years old.[7] Hypertension is without symptoms during its early stages, when detection and therapy are most effective in preventing serious damage to the arteries, heart, brain, and kidneys.

National Findings

In 1988, national mortality from stroke (cerebrovascular disease) was 36-42 percent lower for Hispanic, Asian, and American Indian older persons than for white persons, while it was 24 percent higher for black persons than white persons aged 65 and over.[8]

Wisconsin Findings

Overview. Among all Wisconsin older adults (aged 65 and over), stroke mortality rates in 1987-1991 were somewhat higher overall among women than among men (482 vs. 431 per 100,000 population) (Table 9). This overall comparison, however, masks age variations: women actually had lower stroke mortality rates in the subgroups aged 65-74 and 75-84; only after age 85 was their rate of stroke mortality higher than that of men.

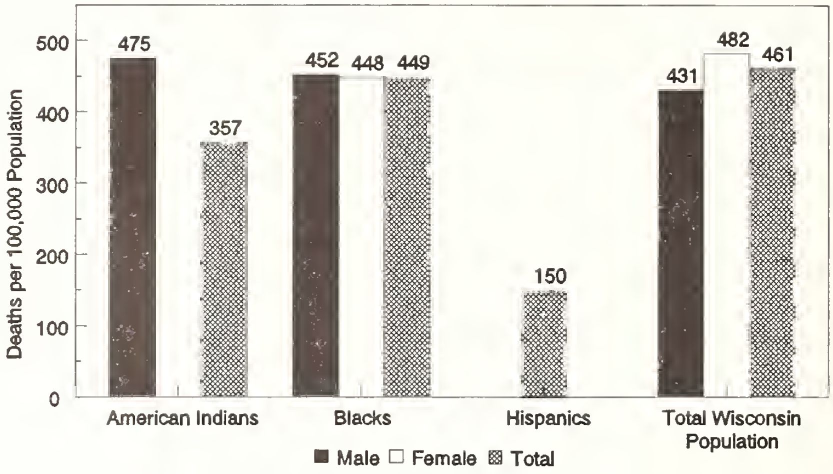
Table 9. Age-Specific Rates of Death* from Stroke Among the Total Wisconsin Population Aged 65 and Over, 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	431	167	617	1,715
Females	482	124	484	1,826
Total	461	143	535	1,795

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.

In general, age-specific rates of death from cerebrovascular disease in Wisconsin were higher among American Indian and African American males compared with all males aged 65 and over (Figure 11). A lower overall rate among African American females aged 65 and over masked higher rates in the 65-74 and 75-84 age subgroups, compared with all females at those ages.

Figure 11. Age-Specific Rates of Death from Cerebrovascular Disease Among Persons Aged 65 and Older, By Race/Ethnicity and Sex, Wisconsin 1987-1991

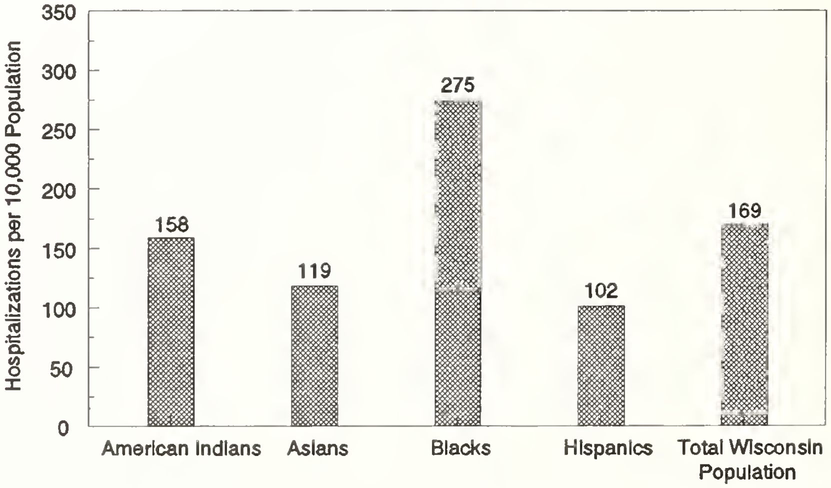


Note: Based on deaths in the age group attributed to cerebrovascular disease (ICD-9 Codes 430-438). There were too few deaths among Asians, American Indian females and Hispanics of either sex to calculate rates. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Compared with all older adults, black persons aged 65 and over experienced a higher rate of hospitalizations in which the principal diagnosis was stroke (Figure 12). Asians and Hispanics aged 65 and over had a lower rate of stroke hospitalization than did the older population as a whole; the stroke hospitalization rate among American Indians aged 65 and over was more similar to that for the general older population.

Figure 12. Age-Specific Rates of Hospitalization for Cerebrovascular Disease Among Persons Aged 65 and Older, By Race/Ethnicity, Wisconsin 1990-1992



Note: Based on principal diagnosis codes ICD-9-CM 430-438. Racial groups exclude Hispanics.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

African Americans. As among younger adults, older blacks in most age subgroups have higher rates of death from stroke than does the total older population (Table 10; Figures 13, 14, 15). Black males aged 65-74 died from cerebrovascular disease at 274 per 100,000 population, or about 1.6 times the rate among all men aged 65-74. The stroke mortality rate among black women aged 65-74 (181 per 100,000) was about 1.5 times the rate among all women in the age group. Stroke death rates were higher among African Americans than among the general population at all ages except 85 and above.

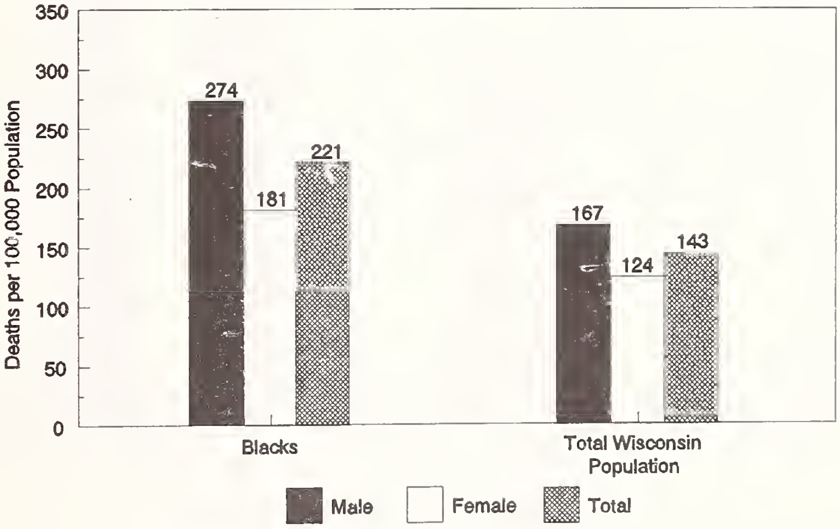
Table 10. Age-Specific Rates of Death* from Stroke Among Blacks Aged 65 and Over, Wisconsin 1987-1991

	Total Rate 65+	Rate 65-74	Rate 75-84	Rate 85+
Males	452	274	766	**
Females	448	181	699	1,521
Total	449	221	723	1,442

Source: Wisconsin death certificates (resident data), Center for Health Statistics
* Rates are the number of deaths per 100,000 population in the age and sex group.
** Fewer than 20 deaths in the 5-year period; no rate was calculated.

Similar to these findings about mortality, hospitalizations with a principal diagnosis of stroke also occurred at a higher rate among older black persons in Wisconsin than in the older population of Wisconsin in general (Figure 12). The age-specific rate of such hospitalizations among all blacks aged 65 and older (275 per 10,000 population) was 1.6 times the rate in the total older population (169). Within the 65-and-over population, the difference was most marked at ages 65-74, when the rate differential was 1.9 (202 vs. 108 per 10,000). Among blacks aged 75 and over, the rate differential was 1.7 (412 vs. 245 per 10,000).

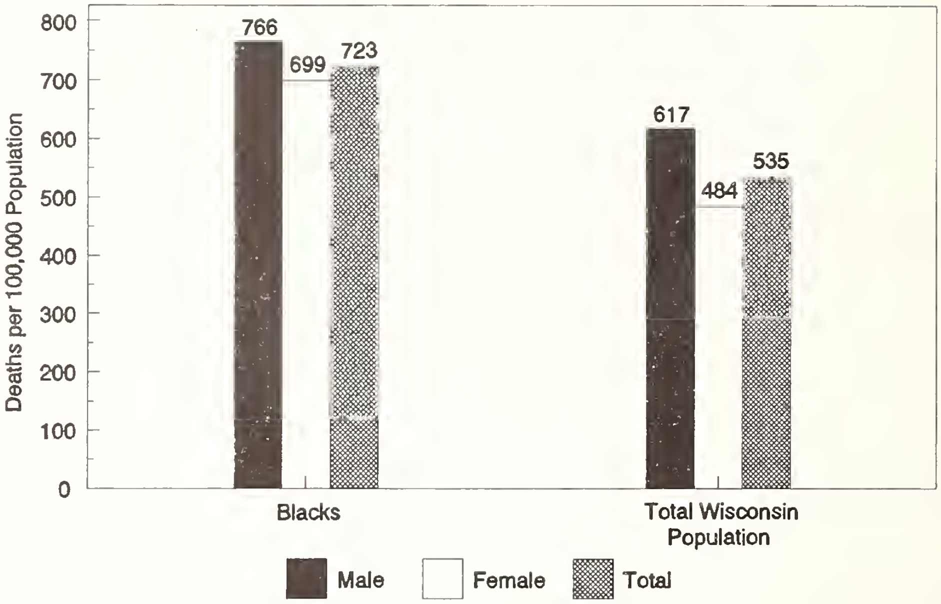
Figure 13. Stroke Mortality Rates, Wisconsin 1987-1991: Persons Aged 65-74



Note: Fewer than 20 deaths attributed to stroke occurred among Hispanics, American Indians, and Asians aged 65-74; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

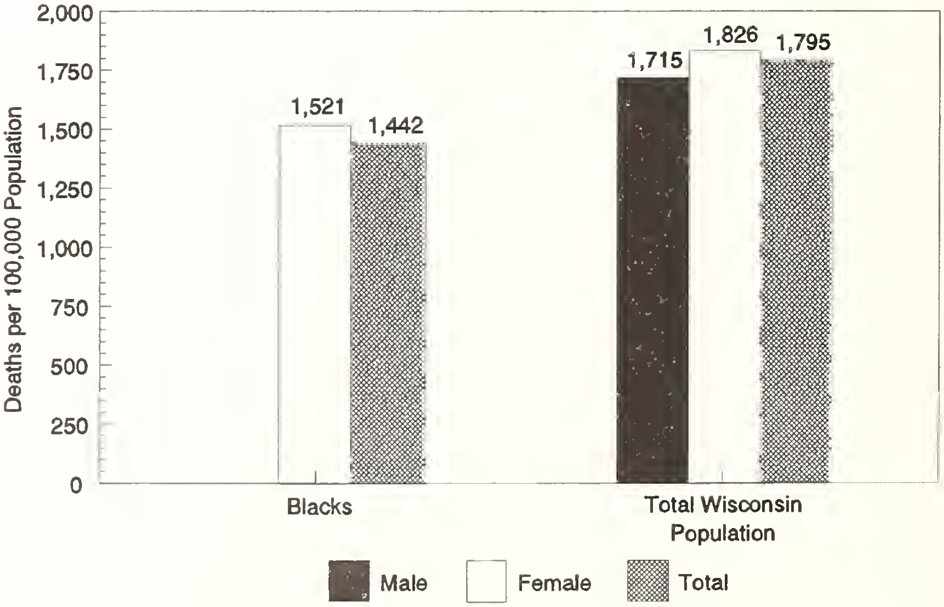
Figure 14. Stroke Mortality Rates, Wisconsin 1987-1991: Persons Aged 75-84



Note: Fewer than 20 deaths attributed to stroke occurred among Hispanics, American Indians, and Asians aged 75-84; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Figure 15. Stroke Mortality Rates, Wisconsin 1987-1991: Persons Aged 85 and Older



Note: Fewer than 20 deaths attributed to stroke occurred among black males, Hispanics, American Indians, and Asians aged 85 and older; no rates are presented.

Source: Wisconsin death certificates (resident data), Center for Health Statistics

American Indians. In 1987-1991, American Indians age 65 and older in Wisconsin had an overall age-specific rate of stroke mortality (357 per 100,000 population) lower than the rate for all older adults in Wisconsin (Figure 11). When the rate is examined separately for men and women, however, American Indian men aged 65-plus had a rate of stroke mortality (475 per 100,000) higher than the rate among all men aged 65 and over (431). (Too few such deaths occurred among American Indian women aged 65 and over to report a rate.)

Reflecting the relatively small number of older American Indians in Wisconsin, the number of deaths attributed to stroke among American Indians aged 65 and over during the five-year period 1987-1991 was too small to analyze the results for age subgroups of the older population.

In 1990-1992, the age-specific rate of hospitalizations with a principal diagnosis of stroke among Indians aged 65 and over (158 per 10,000 population) was fairly similar to the rate in the older population as a whole (169) (Figure 12). Stroke hospitalization rates increased with age, from 113 per 10,000 among American Indians aged 65-74 to 249 per 10,000 among American Indians aged 75 and older. Both these rates were similar to the comparable rates in the total older population (108 and 245).

Hispanics. In Wisconsin in 1987-1991, the age-specific rate of death attributed to stroke among older Hispanics (150 deaths per 100,000 population aged 65 and over) was about one-third the rate in the total population aged 65-plus (Figure 11). Some of this difference may reflect underreporting of Hispanic ethnicity on death certificates. Too few deaths were reported to present rates for age subgroups in the older Hispanic population (averaging a total of about 5 deaths per year among Hispanic persons aged 65 and over).

In 1990-1992, older Hispanics experienced a rate of hospitalizations with a principal diagnosis of cerebrovascular disease (102 per 10,000 population) that was about 60 percent of the rate among all persons aged 65 and over (Figure 12). At ages 65-74, the hospitalization rate for stroke was 70 per 10,000; at ages 75 and older, the rate was 161 per 10,000. Both these rates were about 70 percent of the comparable rates for the total population.

Asians. Among Asians aged 65 and over, an average of 3 deaths per year were attributed to stroke during the five-year period 1987-1991; this was too small a number to present a mortality rate. During the years 1990-1992, Asians aged 65 and over in Wisconsin experienced an age-specific rate of hospitalization with a principal diagnosis of stroke (119 per 10,000) that was about 70 percent of the rate in the total population aged 65 and over (Figure 12). The stroke hospitalization rate among Asians 75 years of age and older was 243 per 10,000 population, similar to the rate for all persons 75 and older (245). (Too few stroke hospitalizations occurred in the 65-74-year-old age group to present a rate.)

Programs

Funded by the Indian Health Service, the Menominee Tribal Clinic provides monthly monitoring of blood pressures at senior meal sites. Blood pressure is also assessed on a walk-in basis at the community health department; hypertension monitoring may be at the request of the patient's physician or on patient request.

Diabetes

Diabetes prevalence increases with age, so that it is a common condition among persons aged 65 and over, especially in most minority groups. Among older adults, diabetes is undoubtedly a serious problem for large percentages of the Hispanic, American Indian, and African American communities in Wisconsin. It is at these older ages that the disabling and even life-threatening effects of diabetes are most likely to occur: heart disease, kidney disease, vision loss, and limb amputations.

National Findings

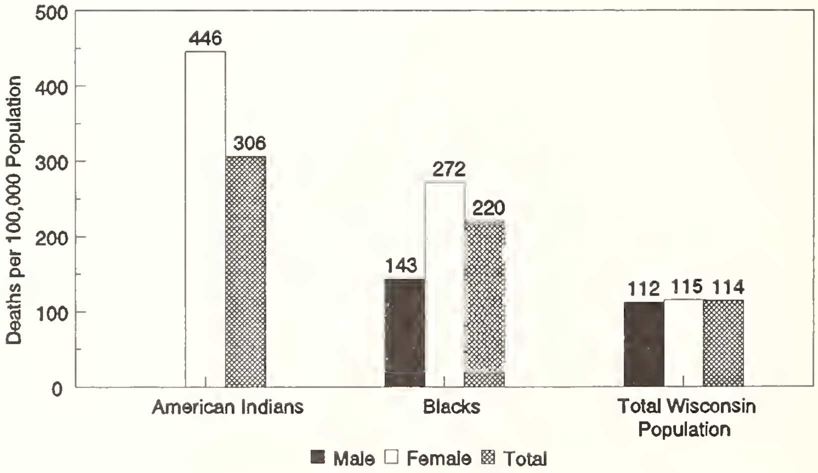
Although no data could be found comparing the relative prevalence of diabetes at older ages, an overall prevalence of diabetes at least 50 percent higher than in whites has been reported for blacks, Hispanics (except Cuban Americans), Native Americans, and several Asian American populations.[9]

Wisconsin Findings

Overview. In 1987-1991, diabetes was cited as the cause of death at the rate of 114 deaths per 100,000 population aged 65 and older. (Studies suggest that diabetes is a factor in eight times as many deaths as indicated by underlying cause on the death certificate.)

American Indians aged 65 and older had a markedly higher rate of mortality from diabetes than did the older population as a whole (Figure 16); the rate was highest among American Indian women. Diabetes mortality was also higher among African American older persons compared with the elderly population as a whole.

Figure 16. Age-Specific Rates of Death from Diabetes
Among Persons Aged 65 and Older,
By Race and Sex, Wisconsin 1987-1991

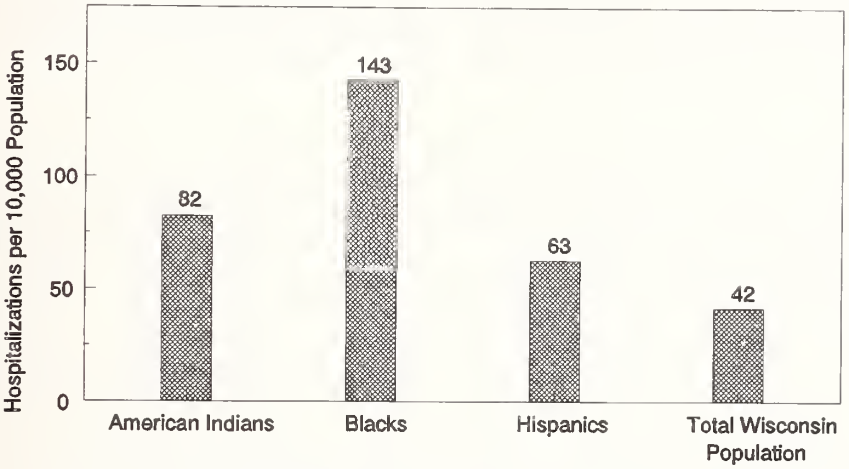


Note: Fewer than 20 deaths attributed to diabetes occurred among American Indian males, Asians, and Hispanics aged 65 and older; no rates are presented. Racial groups exclude Hispanics.

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

Hospitalizations with a principal diagnosis of diabetes occurred at higher rates in the black, American Indian, and Hispanic older populations, compared with all older adults (Figure 17).

Figure 17. Age-Specific Rates of Hospitalization for Diabetes Among Persons Aged 65 and Older, By Race/Ethnicity, Wisconsin 1990-1992



Note: Too few hospitalizations with this diagnosis occurred among Asians age 65 and older to calculate a rate.

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

African Americans. Among blacks aged 65 and older, the overall age-specific rate of death from diabetes in 1987-1991 was 220 deaths per 100,000 population, or nearly twice the rate in the total 65-plus population (Figure 16). Females were at the highest risk, with an age-specific mortality rate from diabetes of 272 per 100,000 population, or 2.4 times the rate for all women 65 and over. (There were too few deaths to present rates for age subgroups of the 65-and-over population.)

Hospitalization data for 1990-1992 showed that black older adults were hospitalized with a principal diagnosis of diabetes at an age-specific rate (143 per 10,000 population) that was 3.4 times the rate among all older adults in Wisconsin (42 per 10,000) (Figure 17). The rate was similarly high in both the 65-74-year-old age group (140) and the 75-and-older group (147).

American Indians. According to 1987-1991 death certificate data, American Indians aged 65 and over had the highest age-specific rate of death from diabetes of any racial or ethnic group in the older population (306 deaths per 100,000); this was nearly 3 times the rate in the total population aged 65 and over (Figure 16). The diabetes mortality rate among American Indian women aged 65-plus was 446 deaths per 100,000 population; there were too few deaths attributed to diabetes among American Indian men in this age group (probably because of the small population base) to calculate a stable rate.

In 1990-1992, American Indians aged 65 and over had an age-specific hospitalization rate for diabetes (82 per 10,000) that was nearly twice as high as the rate in the total older population (42) (Figure 17).

Hispanics. Among Hispanics aged 65 and over, the number of deaths attributed to diabetes was too small to calculate a stable rate (an average of 3 deaths per year during the five-year period 1987-1991). (This small number may be partly attributed to underreporting of Hispanic ethnicity on death certificates.) The age-specific rate of hospitalization for diabetes among Hispanics aged 65 and over (63 per 10,000 population) was about 1.5 times the rate in the total older population (42) (Figure 17).

Asians. During the period 1987-1991, there were no deaths attributed to diabetes among Asians aged 65 and over. Too few hospitalizations with a principal diagnosis of diabetes occurred in this population (an average of 7 hospitalizations per year in 1990-1992) to report a hospitalization rate.

Programs

A Senior Companion Program has been funded by the Wisconsin Bureau on Aging and federal sources and managed by the Great Lakes Inter-Tribal Council. This program has several goals: to assist frail Indian elders living on tribal lands to remain in their own homes on the reservation; to identify elders with potentially disabling chronic conditions who are not receiving needed medical care and ensure proper management of those conditions; to link tribal agencies with other health and social service agencies to see that Indian elders receive needed services; and to tailor programs for tribal elders. To achieve these goals, 41 low-income Indian elder volunteers are paid a stipend to become senior companions to isolated frail Indian elders. Clients are at high risk of chronic disease, in particular diabetes, and resulting disabilities (such as diabetes-related vision loss and amputations). Senior Companions visit between 5 and 10 homebound elderly as often as daily to once a week, depending on need. They provide companionship, assist with medications, and identify unrecognized depression and unmet health and social service needs. Clients are then linked to the appropriate service agency. The program is based on the recognition that Indian elders' life experience and knowledge of tribal ways are valuable and they should be maintained in the circle of community life.

Recognizing that elders traditionally have been the teachers and mentors for children, the Great Lakes Inter-Tribal Council sponsors the Foster Grandparent Program, which is based on this important tribal tradition. The program links elders with special-needs children in work sites such as day care, Head Start, and schools, or through other organized activities in tribal areas. The special relationships that develop provide children with self-esteem, traditional knowledge, and an incentive to learn and do well in school. Foster Grandparents also provide children with caring, competent adult role models.

"Mothers, Grandmothers, Aunties, and Sisters" is a project funded by the Robert Wood Johnson Foundation that seeks to improve maternal and child health among Wisconsin Indian communities by strengthening traditional helping networks. Underway on all 11 Indian reservations in Wisconsin, this program recognizes that women traditionally have looked to elders, family, and community members for assistance during pregnancy, childbirth, and parenting. Since many of these informal helping networks have eroded, and medical care has not filled in the gaps, this project seeks to restore the traditional role of elders and others in supporting and guiding new mothers and their babies. The project also incorporates appropriate medical professionals on local "family support teams" for each reservation.

The Hmong Elderly Project of the Western Wisconsin Area Agency on Aging was organized by the Eau Claire and La Crosse Hmong Mutual Assistance Associations, with funds from local fund-raising, the Wisconsin Bureau on Aging, and the Herb Kohl Foundation. Currently the project coordinator is funded through a grant from the National Association of Area Agencies on Aging. The project seeks to reach Hmong elderly who may experience problems involving isolation, depression, lack of transportation, language barriers, and cultural differences, usually in the context of being responsible for childcare of grandchildren. With this latter fact in mind, programming has been designed around elderly childcare schedules. Program support includes: health care and nutrition education, support groups, exercise programs, translation service, transportation to medical appointments, driver's training, and inclusion in nutrition sites and other senior center programming. Current programming is focused in the Eau Claire area.

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APPENDIX 1

Members of the Minority Health Advisory Committee

Minority Health Report, Center for Health Statistics Advisory Committee Members

Milwaukee Area

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APPENDIX 2

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Table A1. Age Distribution and Median Age of Selected Racial and Ethnic Groups in Wisconsin, 1990

	Total Population	Black	American Indian	Asian	Hispanic	White
Number	4,891,769	241,692	38,986	52,782	92,194	4,464,677
0-5 Years	9%	15%	14%	18%	15%	8%
6-17 Years	17	26	25	53	28	17
18-64 Years	60	56	57	28	53	61
65+ Years	13	4	5	2	4	14
Total Percent	100%	100%	100%	100%	100%	100%
Median Age	32.9	23.4	24.5	21.3	21.9	33.9

Source: U.S. Bureau of the Census
Note: Racial groups exclude Hispanics.

Table A2. Age-Specific Birth Rates, Total Fertility Rates, General Fertility Rates, and Number of Births by Race/Ethnicity, Wisconsin Residents

Age Group	Total Population	Black	American Indian	Southeast Asian	Hispanic	White
Age-Specific Birth Rates[a] 1990						
15-17	24	125	57	133	55	14
18-19	66	249	139	216	143	49
15-19	42	176	91	164	90	29
20-24	96	215	177	393	143	85
25-29	124	120	113	353	117	123
30-34	79	65	63	283	73	79
35-39	28	26	26	198	33	27
40-44	5	5	6	134	8	4
Total Fertility Rate[b], 1990	1.8	3.1	2.4	7.7	2.3	1.7
General Fertility Rate[c]						
1990	64	110	86	265	86	60
1980	69	95	88	[d]	52	68
Number of Births						
1990	72,630	7,096	811	1,612	1,861	61,292
1980	74,763	4,517	630	[d]	753	68,267

Source: Population data from the 1980 and 1990 U.S. Bureau of the Census; birth data from Wisconsin birth certificates.
Note: Racial groups exclude Hispanics.

[a] Number of births per 1,000 women in the age group.

[b] Indicates the average number of children per woman according to the 1990 age-specific rates.

[c] Number of births per 1,000 women aged 15-44 years.

[d] Not available.

Table A3. Family Characteristics of Selected Racial and Ethnic Groups in Wisconsin, 1990

Family Characteristic	Total Population	Black	American Indian	Asian	Hispanic	White
Persons per family	3.1	3.6	3.6	4.5	3.8	3.1
Total families	1,275,172	54,013	8,556	9,074	18,591	1,184,493
Families with children Percent/(Number)	49% (625,633)	67% (36,658)	66% (5,663)	73% (6,678)	70% (12,959)	47.6% (563,805)
Percent married-couple families	79%	30%	51%	87%	65%	82%
Percent with female head	17%	64%	40%	11%	29%	14%

Source: U.S. Bureau of the Census
Note: Racial groups exclude Hispanics.

Table A4. Living Arrangements of Children (Less than 18 Years of Age), Wisconsin 1990

	Total	Black	American Indian	Asian*	All Hispanic**	White
Number < 18 years	1,288,982	96,675	14,960	22,401	34,622	1,114,769
In household of parent(s)	94%	83%	86%	94%	89%	96%
In married-couple family	76	24	46	85	57	82
In female-headed family	15	55	32	7	28	11
In grandparent's household	3	10	7	1	5	2
In other relative's household	1	4	3	2	2	1
In non-relative's household	2	3	4	1	3	2

Source: U.S. Bureau of the Census
* See Table 17 of report for national-origin groups.
** See Table 15 of report for national-origin groups.
Note: Racial groups exclude Hispanics.

Table A5. Percent of Children in Poverty* by Age, Race and Hispanic Origin, Wisconsin 1990

	All Children	Less than 5 Years	5 Years	6-11 Years	12-17 Years
TOTAL	15%	18%	16%	15%	12%
Black	56	62	61	58	47
American Indian	46	55	53	45	37
Asian	49	55	52	49	39
Hispanic	34	40	34	33	28
White	10	12	11	10	8

Source: U.S. Bureau of the Census

* Based on household size and 1989 household income as reported to the 1990 U.S. Census.

Note: Racial groups in this table include Hispanics.

Table A6. Percent of Families with Children and Incomes Below Poverty*, By Race/Ethnicity and Family Type, Wisconsin 1990

	Total	Black	American Indian	Asian	Hispanic	White
Married-couple family	5%	15%	21%	40%	15%	4%
Female-headed family	43	64	67	66	64	35

Source: U.S. Bureau of the Census

* Based on household size and 1989 household income as reported to the 1990 U.S. Census.

Note: Racial groups in this table include Hispanics.

Table A7. Poverty Rates* by Age, Wisconsin 1980 and 1990

	Total		Black		American Indian		Asian		Hispanic		White	
	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990
Total	9%	11%	29%	41%	23%	35%	21%	41%	19%	27%	8%	8%
Less than 18 years	10	15	39	56	27	46	21	49	22	34	8	10
18-64 years	8	9	22	31	21	29	21	36	16	22	7	8
65+ years	10	9	18	21	16	22	15	30	13	18	9	8

Source: U.S. Bureau of Census

* Based on household size and 1989 household income as reported to the 1990 U.S. Census.

Note: Racial groups in this table include Hispanics.

Table A8. Percent of Older Adults In Poverty*, By Race/Ethnicity, Wisconsin 1980 and 1990

	1980	1990		
	Total 65+	Total 65+	65-74	75+
Total	10%	9%	7%	13%
African Americans	18	21	20	24
American Indians	16	22	18	29
Asians	15	30	30	32
Hispanics	13	18	17	23
Whites	9	9	6	12

Source: U.S. Bureau of the Census.

* Based on income in the previous year as reported to the U.S. Census, and federal poverty guidelines for income and household size.

Table A9. Measures of Prenatal and Infant Health, Wisconsin 1991

	Total	African American	American Indian	Southeast Asian	Hispanic	White
Percent of Live Births	100.0%	9.9	1.2	1.7	2.7	83.8
Infant Mortality						
Infant mortality rate*	8.6	17.4	15.2	8.3	8.1	7.6
Neonatal mortality rate*	5.2	9.6	6.7	5.5	4.7	4.7
Postneonatal mortality rate*	3.5	7.9	8.5	**	3.4	2.9
Low Birthweight						
Less than 2,500 grams (%)	6.2%	14.2	4.9	6.7	6.7	5.2
Less than 1,500 grams (%)	1.1%	2.9	0.8	1.0	1.0	0.9
Prenatal Care						
First-trimester care (%)	81%	58	61	39	65	86
13+ prenatal visits (%)	30%	16	16	7	20	32
Third-trimester or no care (%)	4%	11	9	13	9	2
First-trimester/≥ 10 visits (%)***	85%	71	70	60	81	87
Delivery at Term						
37 or more weeks gestation (%)	91%	80	92	87	89	92
Birth Risk Factors						
Maternal age less than 18 (%)	4%	14	8	7	10	2
Not married (%)	25%	83	63	8	45	18
Less than high school graduate (%)	17%	47	43	80	50	11
Fourth or higher birth (%)	12%	20	22	63	17	9
Less than 24 months since last live birth (%)	17%	29	25	56	24	15

Source: Wisconsin birth certificates (resident data), 1991; matched files of infant births and deaths, 1987-1991.

* Rate is the number of infant deaths per 1,000 live births, 1987-1991. Neonatal deaths are those occurring before 28 days of age. Postneonatal deaths are those occurring between 28 days and 1 year of age.
** Number of postneonatal deaths too low to calculate a rate.
*** Of women with first-trimester care, the percentage who made 10 or more visits.

Note: Racial groups exclude Hispanics.

Table A10. Average Annual Number and Percent Distribution of Deaths by Cause Among Total Population, Wisconsin, 1987-1991

Cause of Death	Average Number (Rounded)	Percent
Heart disease (all forms)	14,997	35.2%
Cancer	9,924	23.3
Stroke	3,295	7.7
Unintentional injury	1,666	3.9
Pneumonia	1,633	3.8
Chronic obstructive pulmonary disease (COPD)	1,596	3.7
Diabetes	943	2.2
Suicide	623	1.5
Other arterial disease	559	1.3
Nephritis and nephrosis	404	0.9
Atherosclerosis	401	0.9
Chronic liver disease & cirrhosis	394	0.9
Septicemia	313	0.7
Congenital anomalies	250	0.6
Perinatal conditions	242	0.6
Homicide	198	0.5
All other causes	5,178	12.2
Total	42,617	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Table A11. Average Annual Number and Percent Distribution of Deaths by Cause Among American Indians, Wisconsin, 1987-1991

Cause of Death	Average Number (Rounded)	Percent
Heart disease (all forms)	56	28.1%
Cancer	35	17.4
Unintentional injury	22	10.8
Diabetes	11	5.5
Stroke	9	4.5
Chronic liver disease & cirrhosis	7	3.7
Chronic obstructive pulmonary disease (COPD)	7	3.3
Nephritis and nephrosis	5	2.3
Suicide	4	2.2
Pneumonia	4	2.0
Homicide	3	1.4
Congenital anomalies	3	1.3
Atherosclerosis	2	1.0
Perinatal conditions	2	0.8
Other arterial disease	2	0.8
Septicemia	1	0.4
All other causes	29	14.6
Total	201	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Table A12. Average Annual Number and Percent Distribution of Deaths by Cause Among Blacks, Wisconsin, 1987-1991

Cause of Death	Average Number (Rounded)	Percent
Heart disease (all forms)	310	23.9%
Cancer	287	22.2
Homicide	92	7.1
Unintentional injury	75	5.8
Stroke	74	5.7
Perinatal conditions	51	4.0
Diabetes	40	3.1
Pneumonia	30	2.3
Chronic obstructive pulmonary disease (COPD)	29	2.3
Congenital anomalies	20	1.5
Suicide	19	1.5
Nephritis and nephrosis	17	1.4
Chronic liver disease & cirrhosis	16	1.3
Septicemia	12	0.9
Other arterial disease	9	0.7
Atherosclerosis	4	0.3
All other causes	207	16.0
Total	1,293	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics

Table A13. Average Annual Number and Percent Distribution of Deaths by Cause Among Hispanics*, Wisconsin, 1987-1991

Cause of Death	Average Number (Rounded)	Percent
Heart disease (all forms)	30	22.3%
Cancer	21	15.1
Unintentional injury	15	10.9
Stroke	8	6.2
Homicide	7	5.0
Diabetes	6	4.3
Suicide	5	4.0
Perinatal conditions	4	3.2
Chronic liver disease & cirrhosis	4	3.2
Congenital anomalies	4	3.0
Pneumonia	3	2.2
Chronic obstructive pulmonary disease (COPD)	3	1.9
Nephritis and nephrosis	2	1.5
Other arterial disease	2	1.3
Septicemia	<1	0.2
Atherosclerosis	0	0.0
All other causes	22	16.0
Total	136	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* Based on population-based rates calculated from these frequencies, it appears that Hispanic ethnicity may be underreported on death certificates in Wisconsin. It is not known if the underestimates vary by cause of death.

Table A14. **Average Annual Number and Percent Distribution of Deaths by Cause Among Southeast Asians, Wisconsin, 1987-1991**

Cause of Death	Average Number (Rounded)	Percent
Cancer	7	21.6%
Unintentional injury	6	17.4
Heart disease (all forms)	4	11.4
Congenital anomalies	2	6.6
Stroke	2	6.0
Perinatal conditions	2	5.4
Nephritis and nephrosis	1	3.0
Suicide	1	3.0
Chronic obstructive pulmonary disease (COPD)	1	2.4
Homicide	1	1.8
Pneumonia	1	1.8
Diabetes	<1	1.2
Septicemia	<1	1.2
All other causes	6	17.4
Total	33	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics.
Note: Numbers may not add exactly to total because of rounding.

Table A15. **Average Annual Number and Percent Distribution of Deaths by Cause Among Other Asians*, Wisconsin, 1987-1991**

Cause of Death	Average Number (Rounded)	Percent
Heart disease (all forms)	8	22.2%
Cancer	8	21.6
Unintentional Injury	3	9.1
Stroke	3	7.4
Diabetes	1	3.4
Homicide	1	2.8
Suicide	1	2.8
Chronic obstructive pulmonary disease (COPD)	1	2.3
Pneumonia	1	2.3
Nephritis and nephrosis	1	1.7
Congenital Anomalies	<1	1.1
Chronic liver disease & cirrhosis	<1	1.1
Perinatal conditions	<1	1.1
Atherosclerosis	<1	0.6
Other arterial disease	<1	0.6
Septicemia	<1	0.6
All other causes	7	19.3
Total	35	100.0%

Source: Wisconsin death certificates (resident data), Center for Health Statistics.
* Other than Southeast Asians.

Table A16. Coronary Heart Disease Deaths, Wisconsin 1987-1991

	Annual Average Number	Mortality Rates (Deaths per 100,000 Population)						
		Total*	18-44	45-64	65-74	75-84	85+	65+
Total Wisconsin Population								
Males	5,830	244	11	243	984	2,322	5,486	1,764
Females	5,273	211	3	73	418	1,336	4,343	1,274
Total	11,105	227	7	156	671	1,713	4,668	1,472
American Indians								
Males	25	305	**	409	1,246	2,294	**	1,544
Females	17	286	**	**	736	1,630	**	1,249
Total	42	295	**	257	967	1,877	2,941	1,375
Asians								
Males	4	66	**	**	**	**	**	**
Females	3	**	**	**	**	**	**	**
Total	7	64	**	**	**	**	**	**
Blacks								
Males	95	232	13	281	752	1,914	4,219	1,236
Females	94	266	**	118	672	1,398	3,992	1,167
Total	189	242	9	191	707	1,583	4,063	1,195
Hispanics								
Males	16	106	**	124	505	**	**	678
Females	8	76	**	**	**	**	**	270
Total	24	94	**	73	326	546	1,504	451
Whites								
Males	5,689	245	11	243	992	2,338	5,536	1,780
Females	5,151	211	3	72	415	1,339	4,359	1,283
Total	10,840	228	7	156	673	1,721	4,692	1,485

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Note: Includes all deaths attributed to coronary heart disease (IDC-9 codes 410-414). Racial groups exclude Hispanics.

Table A17. Cancer Deaths, Wisconsin 1987-1991

	Average Annual Number	Mortality Rates (Deaths per 100,000 Population)						
		Total*	18-44	45-64	65-74	75-84	85+	65+
Total Wisconsin Population								
Males	5,287	221	17	300	1,050	1,836	2,688	1,427
Females	4,636	186	19	244	640	981	1,372	859
Total	9,925	203	18	271	824	1,307	1,746	1,090
American Indians								
Males	18	203	**	327	712	**	**	831
Females	17	193	**	229	589	**	**	714
Total	35	199	24	277	645	853	**	764
Asians								
Males	7	96	**	**	**	**	**	**
Females	8	96	**	**	**	**	**	**
Total	15	96	**	94	**	**	**	461
Blacks								
Males	163	353	23	539	1,607	2,488	2,532	1,878
Females	124	235	23	304	802	1,075	1,521	944
Total	287	289	23	409	1,148	1,583	1,835	1,319
Hispanics								
Males	12	71	**	103	404	**	**	407
Females	9	56	**	**	**	**	**	216
Total	21	65	**	84	326	**	**	300
Whites								
Males	5,086	220	17	297	1,047	1,836	2,709	1,430
Females	4,478	186	19	244	640	984	1,374	862
Total	9,564	202	18	270	822	1,310	1,752	1,093

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Note: Includes all deaths attributed to malignant neoplasms (ICD-9 codes 140-208). Racial groups exclude Hispanics.

Table A18. Stroke Deaths, Wisconsin 1987-1991

	Average Annual Number	Mortality Rates (Deaths per 100,000 Population)						
		Total*	18-44	45-64	65-74	75-84	85+	65+
Total Wisconsin Population								
Males	1,309	55	3	31	167	617	1,715	431
Females	1,986	79	2	23	124	484	1,826	482
Total	3,295	67	3	27	143	535	1,795	461
American Indians								
Males	5	64	**	**	**	**	**	475
Females	3	**	**	**	**	**	**	**
Total	8	61	**	**	**	**	**	357
Asians								
Males	2	**	**	**	**	**	**	**
Females	3	**	**	**	**	**	**	**
Total	5	52	**	**	**	**	**	**
Blacks								
Males	34	91	**	76	274	766	**	452
Females	38	110	**	43	181	699	1,521	448
Total	72	100	**	58	221	723	1,442	449
Hispanics								
Males	4	28	**	**	**	**	**	**
Females	3	**	**	**	**	**	**	**
Total	7	30	**	**	**	**	**	150
Whites								
Males	1,259	54	3	30	164	615	1,722	429
Females	1,934	79	**	22	123	482	1,836	482
Total	3,193	67	2	26	142	533	1,804	461

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.

** Fewer than 20 deaths during the 5-year period (no rate was calculated).

Note: Includes all deaths attributed to cerebrovascular disease (ICD-9 codes 430-438). Racial groups exclude Hispanics.

Table A19. Diabetes Deaths, Wisconsin 1987-1991

	Average Annual Number	Mortality Rates (Deaths per 100,000 Population)			
		Total*	18-44	45-64	65+
Total Wisconsin Population					
Males	402	17	2	19	112
Females	538	22	2	17	115
Total	943	19	2	18	114
American Indians					
Males	3	34	**	**	**
Females	8	107	**	**	446
Total	11	69	**	79	306
Asians					
Males	1	**	**	**	**
Females	1	**	**	**	**
Total	2	**	**	**	**
Blacks					
Males	13	29	**	38	143
Females	27	61	**	56	272
Total	40	45	**	48	220
Hispanics					
Males	3	**	**	**	**
Females	3	**	**	**	**
Total	6	20	**	**	**
Whites					
Males	384	18	2	18	111
Females	500	22	2	15	113
Total	884	20	2	16	112

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 deaths in the 5-year period (no rate was calculated).

Note: Includes all deaths attributed to diabetes mellitus (ICD-9 code 250). Racial groups exclude Hispanics.

Table A20. Total Injury Deaths, Wisconsin 1987-1991

	Average Annual Number	Mortality Rates (Deaths per 100,000 Population)					
		Total*	<1	1-17	18-44	45-64	65+
Total Wisconsin Population							
Males	1,776	74	43	27	87	66	154
Females	748	30	31	14	24	24	77
Total	2,515	51	37	21	55	45	108
American Indians							
Males	23	141	**	**	173	205	**
Females	7	47	**	**	48	**	**
Total	30	93	**	30	109	119	**
Asians							
Males	9	42	**	**	44	**	**
Females	4	21	**	**	**	**	**
Total	13	31	**	19	26	**	**
Blacks							
Males	148	154	117	50	209	111	143
Females	45	46	89	29	33	31	64
Total	193	96	103	40	114	68	105
Hispanics							
Males	24	58	**	21	74	**	**
Females	3	**	**	**	**	**	**
Total	27	35	**	14	44	**	**
Whites							
Males	1,571	71	35	25	81	64	155
Females	688	30	27	13	24	24	77
Total	2,259	50	33	19	52	44	109

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 deaths in the 5-year period (no rate is presented).

Note: Includes all deaths attributed to injury (ICD-9 codes 800-999). Racial groups exclude Hispanics.

Table A21. Unintentional Injury Deaths, Wisconsin 1987-1991

	Average Annual Number	Mortality Rates (Deaths per 100,000 Population)					
		Total*	<1	1-17	18-44	45-64	65+
Total Wisconsin Population							
Males	1,106	46	29	20	50	38	110
Females	562	23	17	12	14	15	70
Total	1,665	34	23	16	32	26	86
American Indians							
Males	17	105	**	**	111	164	**
Females	5	37	**	**	**	**	**
Total	22	71	**	**	67	99	**
Asians							
Males	6	28	**	**	**	**	**
Females	3	**	**	**	**	**	**
Total	9	22	**	19	**	**	**
Blacks							
Males	52	55	**	24	50	68	143
Females	23	26	**	20	11	25	**
Total	75	39	**	22	29	44	86
Hispanics							
Males	12	29	**	**	37	**	**
Females	2	**	**	**	**	**	**
Total	14	19	**	11	22	**	**
Whites							
Males	1,016	46	25	20	49	37	110
Females	528	23	17	11	15	15	70
Total	1,544	34	21	16	32	25	87

Source: Wisconsin death certificates (resident data), Center for Health Statistics.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 deaths in the 5-year period (no rate is presented).

Note: Includes all deaths attributed to unintentional injury (ICD-9 codes 800-949). Racial groups exclude Hispanics.

Table A22. Hospitalizations for Coronary Heart Disease, Wisconsin 1990-1992

	Average Annual Number	Rates (Hospitalizations per 10,000 Population)					
		Total*	18-44	45-64	65-74	65+	75+
Total Wisconsin Population							
Males	20,066	84	13	203	378	376	372
Females	12,797	51	4	72	207	238	270
Total	32,863	67	8	136	283	294	307
American Indians							
Males	65	63	**	135	249	261	**
Females	42	47	**	61	221	205	**
Total	105	54	8	97	234	229	222
Asians							
Males	22	24	**	58	**	**	**
Females	9	**	**	**	**	**	**
Total	31	16	**	32	**	**	**
Blacks							
Males	453	82	17	174	321	342	390
Females	410	78	8	123	238	264	306
Total	863	77	12	146	274	295	333
Hispanics							
Males	112	55	8	113	212	271	393
Females	93	60	**	83	260	264	272
Total	205	56	6	99	238	267	313
Whites							
Males	15,926	69	10	167	390	359	311
Females	10,217	42	3	58	169	194	230
Total	26,143	56	7	112	233	245	259

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 hospitalization in the seven-quarter period analyzed (no rate is presented).

Note: Includes all hospitalizations with a principal diagnosis coded ICD-9-CM 410-414. Racial groups exclude Hispanics.

Table A23. Hospitalizations for Cancer, Wisconsin 1990-1992

	Average Annual Number	Rates (Hospitalizations per 10,000 Population)					
		Total*	18-44	45-64	65-74	65+	75+
Total Wisconsin Population							
Males	12,181	51	8	78	252	293	358
Females	12,689	51	13	86	176	186	199
Total	24,870	51	11	82	209	230	256
American Indians							
Males	30	31	**	53	**	166	**
Females	22	20	**	42	**	**	**
Total	52	26	**	47	89	107	**
Asians							
Males	18	20	**	**	**	**	**
Females	34	30	**	45	**	132	**
Total	52	26	**	38	**	125	243
Blacks							
Males	403	77	10	135	352	380	445
Females	450	68	18	106	233	254	289
Total	853	73	14	119	286	305	344
Hispanics							
Males	57	29	**	39	192	176	**
Females	55	28	7	47	112	97	**
Total	112	29	6	43	154	135	102
Whites							
Males	9,953	43	7	66	212	250	307
Females	10,489	44	12	75	149	161	172
Total	20,442	44	9	71	177	197	220

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.
** Fewer than 20 hospitalizations during the seven-quarter period analyzed (no rate is presented).

Note: Includes all hospitalizations with a principal diagnosis coded ICD-9-DM 140-208. Racial groups exclude Hispanics.

Table A24. Hospitalizations for Stroke, Wisconsin 1990-1992

	Average Annual Number	Rates (Hospitalizations per 10,000 Population)					
		Total*	18-44	45-64	65-74	65+	75+
Total Wisconsin Population							
Males	6,680	28	2	34	131	188	275
Females	7,228	29	2	22	89	156	228
Total	13,908	29	2	28	108	169	245
American Indians							
Males	20	23	**	**	**	143	**
Females	26	34	**	**	**	169	**
Total	46	28	**	28	113	158	249
Asians							
Males	16	23	**	**	**	**	**
Females	11	17	**	**	**	**	**
Total	27	20	**	**	**	119	243
Blacks							
Males	270	60	7	89	226	280	406
Females	310	69	6	62	184	272	415
Total	580	64	7	74	202	275	412
Hispanics							
Males	36	22	**	27	**	129	**
Females	28	21	**	**	**	75	**
Total	64	22	**	24	70	102	161
Whites							
Males	5,409	23	2	27	111	160	235
Females	5,875	24	1	17	75	133	194
Total	11,284	24	2	22	91	144	209

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin Population.
** Fewer than 20 hospitalizations during the seven-quarter period analyzed (no rate is presented).

Note: Includes all hospitalizations with a principal diagnosis coded ICD-9-DM 430-438. Racial groups exclude Hispanics.

Table A25. Hospitalizations for Diabetes, Wisconsin 1990-1992

	Average Annual Number	Rates (Hospitalizations per 10,000 Population)					
		Total*	18-44	45-64	65-74	65+	75+
Total Wisconsin Population							
Males	3,163	13	9	21	35	41	50
Females	3,651	15	8	20	36	42	47
Total	6,814	14	9	20	36	42	48
American Indians							
Males	24	18	**	53	**	**	**
Females	26	19	**	50	**	**	**
Total	50	19	**	49	**	82	**
Asians							
Males	8	**	**	**	**	**	**
Females	10	**	**	**	**	**	**
Total	18	6	**	**	**	**	**
Blacks							
Males	341	44	30	92	116	133	172
Females	423	49	24	105	158	150	138
Total	764	47	26	99	140	143	147
Hispanics							
Males	59	19	9	49	**	**	**
Females	57	20	9	49	**	65	**
Total	116	20	9	49	51	63	**
Whites							
Males	2,405	11	7	16	29	34	42
Females	2,735	12	7	14	29	34	40
Total	5,140	11	7	15	29	34	41

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.

** Fewer than 20 hospitalizations during the seven-quarter period analyzed (no rate is presented).

Note: Includes all hospitalizations with a principal diagnosis coded IDC-9-CM 250. Racial groups exclude Hispanics.

Table A26. Hospitalizations for Injuries, Wisconsin 1990-1992

	Average Annual Number	Rates (Hospitalizations per 10,000 Population)					
		Total*	<1	1-17	18-44	45-64	65+
Total Wisconsin Population							
Males	26,930	113	72	64	107	119	244
Females	24,482	98	51	43	62	91	292
Total	51,411	105	62	54	84	105	272
American Indians							
Males	140	86	**	34	97	90	178
Females	117	86	**	26	63	73	232
Total	257	85	**	30	79	81	214
Asians							
Males	90	43	**	27	30	66	**
Females	64	38	**	18	23	**	**
Total	154	40	**	23	26	45	92
Blacks							
Males	2,477	257	138	111	310	237	290
Females	1,587	180	128	67	133	163	347
Total	4.064	216	133	90	214	196	323
Hispanics							
Males	425	105	106	45	108	126	197
Females	234	79	**	29	51	77	221
Total	659	94	86	37	81	102	210
Whites							
Males	20,493	92	57	53	84	101	211
Females	19,617	83	36	37	51	78	256
Total	40,110	88	47	45	67	89	237

Source: Wisconsin Center for Health Statistics, Minority Hospitalization File, for July 1990 through March 1992, data extracted from the Office of Health Care Information's Hospital Inpatient Discharge Data Base.

* All ages; total rates by race/ethnicity are age-adjusted to the 1990 Wisconsin population.

** Fewer than 20 hospitalizations in the seven-quarter period analyzed (no rate is presented).

Note: Includes all hospitalizations with a principal diagnosis coded ICD-9-CM 800-999. Racial groups exclude Hispanics.

APPENDIX 3

Technical Notes

Technical Notes

U.S. Census

The 1990 U.S. Census provided the Wisconsin population counts by race/ethnicity, age, and sex that were used as the denominators for all population-based mortality and hospitalization rates presented in this report. For 1990, the counts of the population by age and sex for black, American Indian, total Asian, non-Hispanic white, and Hispanic groups are from the Modified 100% Edited Detail File of the 1990 Census.

Analysis of U.S. Census data for Wisconsin was also the source for most of the "Population Characteristics" chapter of this report.

All 1990 Census data used in this report are from published reports or the summary computer tape files. Some social and economic information in these sources was available only for the more inclusive minority classifications, while other information was available for more specific population groups. For example, the 1990 Census included counts by age and sex for persons of Mexican, Puerto Rican, Cuban, and other Hispanic origins; however, poverty status was available only for the groups that include "all Hispanics" as a single category.

Specific sources were:

For 1990: U.S. Department of Commerce, Bureau of the Census. *1990 Census of Population and Housing, Summary Population and Housing Characteristics, 1990*, CPH-5-5; *1990 Census of Population, General Population Characteristics, Wisconsin*, CP-1-51; 1990 Census of Population, Summary Tape File 1A and Summary Tape File 3A.

For 1980: U.S. Department of Commerce, Bureau of the Census. *1980 Census of Population*, PC80-1-B51; *1980 Census of Population*, PC80-1-C51.

Births

Information about births to Wisconsin residents is derived from the files of birth certificates maintained by the vital records section of the Center for Health Statistics. Most birth information presented in this report is for 1991. Birth data for the years 1987-1991 were combined for the computation of infant mortality rates (see the following discussion of infant mortality).

Birth certificates provide information about maternal demographic, socioeconomic, and health variables, including maternal race/ethnicity, age, education, marital status, birth order, prenatal care, risk factors, and complications of pregnancy and delivery. Birth certificates also provide information about birthweight, gestational age at birth, measures of the infant's physical condition shortly after birth, and congenital malformations.

All birth-related information in this report reflects births to Wisconsin residents (defined by mother's residence at time of birth), regardless of where the birth occurred.

For purposes of analysis, all live births were classified by race or Hispanic origin of mother into six categories: black, white, American Indian, Hispanic, Southeast Asian, and all other (mostly Asian, but a few Pacific Islander). Hispanics constitute a separate category and thus are excluded from the racial categories. (Beginning in 1989, Hispanic origin of mother was collected with a separate birth certificate question; this has probably improved reporting of Hispanic births.)

The category "Southeast Asian" in the birth information analyzed for this report corresponds to the "Indochinese" category in the annual Center for Health Statistics publication, *Maternal and Child Health*

Statistics. This category includes births to mothers who are Cambodian, Vietnamese, Laotian, or Hmong. These births are identified from the birth certificate according to the self-reported information given on race (which in this case includes national origin), or according to the birthplace of the mother. If the birth certificate item on "race" was coded as "other," but the mother was born in Laos, Vietnam, or Cambodia, race/ethnicity of the mother was recoded to Southeast Asian.

For purposes of the analysis in this report, "prematurity" is defined as less than 37 weeks gestational age at birth, computed as the difference between the first day of the last menstrual period (LMP) and the date of birth. In cases where the birth certificate had missing or incomplete information on LMP, the physician's estimate of gestational age was substituted.

Birth certificate data on levels of prenatal care (trimester of initiation and number of visits) probably overestimate both the proportion of women who receive first-trimester care and the average number of visits, according to a comparison made of birth certificates and medical records in one large urban hospital in Wisconsin [personal communication, F. Broekhuizen, M.D.]. A Tennessee study that compared birth certificate information with infant/maternal delivery hospital records found a tendency for the birth certificate to report an earlier initiation of prenatal care than was documented in the medical records, as well as more prenatal visits than were documented.[a] These results suggest that levels of prenatal care based on birth certificate information are conservative estimates of risk; i.e., the proportion of women who do not receive first-trimester care and the proportion who do not receive an adequate number of visits are almost certainly higher than are estimated from birth certificate data.

Natality data for Wisconsin are reported annually in three Center for Health Statistics publications: *Maternal and Child Health Statistics*, *Vital Statistics*, and *Public Health Profiles*. All three publications are available free of charge from the Center for Health Statistics. For further technical information about the birth certificate, see the Technical Notes in the 1990 and 1991 editions of *Maternal and Child Health Statistics*.

Infant Mortality

Information about Wisconsin resident infant deaths is derived from the matched infant mortality computer file constructed by the vital records section of the Center for Health Statistics. The file is constructed by matching a year's infant death records (deaths at less than 1 year of age) with corresponding birth certificate records. In analyzing infant mortality, residence is defined as the infant's residence at time of death.

Unlike cause-of-death analysis at other ages, in which the death certificate "underlying cause of death" is used, the cause of death for an infant is revised to reflect information on the deceased infant's birth certificate (such as birthweight and gestational age).

Infant mortality rates by race/ethnicity are based on the race/ethnicity of the mother, as reported on the birth certificate. Other characteristics related to infant mortality (prenatal care, birthweight, education of mother, etc.) are also drawn from the birth certificate.

In the infant mortality rates presented in this report, the numerator is the number of infant deaths during the years 1987-1991; the denominator is the number of live births during that five-year period. Rates for which the numerator is less than 20 are not presented, because rates based on small numerators are subject to large random fluctuations.

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[a] Piper JM, Mitchel EF, Snowden M, et al. Validation of 1989 Tennessee birth certificates using maternal and newborn hospital records. *American Journal of Epidemiology* 1993; 137(7):758-768.

Wisconsin infant mortality data are reported annually in three Center for Health Statistics publications: *Maternal and Child Health Statistics*, *Vital Statistics*, and *Public Health Profiles*. All three publications are available free of charge from the Center for Health Statistics.

Prenatal Care Study

The 1990 Prenatal Care Study examined responses to a mailed questionnaire sent to a representative sample of Wisconsin women who gave birth in 1990, and the corresponding birth certificate for each sampled birth. Variables examined included barriers to obtaining prenatal care reported by the sampled women, as well as variations in prenatal care use by payment source, race/ethnicity, and region of the state.

Since this was a mail survey, results probably underestimate the proportion of childbearing women at lower income levels, because survey respondents tend to be of higher socioeconomic status than nonresponders. This reflects the response bias common to all mail surveys.

More information about this survey is available from two publications: *Prenatal Care in Wisconsin: Regional Differences, 1990*; and *Prenatal Care in Wisconsin: Differences by Payment Source and Race, 1990*. Both are available free of charge from the Center for Health Statistics.

Mortality

Information about deaths among Wisconsin residents is derived from the files of death certificates maintained by the vital records section of the Center for Health Statistics. Mortality findings in this report are based on five years of data (1987-1991). A mortality rate (deaths per 100,000 population) is presented if there were at least 20 deaths during the five-year period (an annual average of at least 4 deaths).

The mortality information presented in this report represents "resident data," that is, events that have been assigned to the area where the person lives (e.g., Wisconsin) regardless of where the event occurred. Resident statistics incorporate out-of-state occurrences obtained through an inter-state exchange agreement.

Mortality statistics in this report reflect the Ninth Revision of the International Classification of Diseases (ICD-9), and represent the underlying cause of death. (Infant mortality rates reflect the revised underlying cause; see the preceding discussion of "Infant Mortality.") The underlying cause is defined as "the disease or injury which initiated the train of morbid events, leading directly to death." Since 1973, all causes mentioned on the death certificate are coded in the Center for Health Statistics, and the underlying cause is determined using the Automated Classification of Medical Entities computer program developed by the National Center for Health Statistics.

Based on the numbers of deaths reported for Hispanic residents of Wisconsin in 1987-1991, the resulting rates (deaths per 100,000 population) appear much lower than rates for Hispanics in the United States generally. Accordingly, it is probable that Hispanic ethnicity is underreported on Wisconsin death certificates. That is, in an unknown number of instances the death certificate does not indicate that the person was Hispanic, and the death is thus counted as non-Hispanic. Death rates reported for Hispanic persons in this report should therefore be viewed with caution and even skepticism.

Vital Statistics, an annual publication of the Center for Health Statistics, presents yearly statistical summaries of vital events in Wisconsin, including births, deaths, fetal deaths, marriages, and divorces. It is available free of charge from the Center for Health Statistics.

Hospitalizations

The hospital findings presented in this report are based on data submitted to the Office of Health Care Information, extracted from each hospital's Uniform Billing record (UB-82). Data consist of records for all hospitalizations of Wisconsin residents discharged from Wisconsin hospitals between July 1, 1990 and March 31, 1992 (seven calendar quarters).

Rates are based on annualized average frequencies from these years and represent hospitalizations (discharges from hospitals); they do not reflect an unduplicated count of individual patients. A hospitalization rate (hospitalizations per 10,000 population) was presented in this report if there were at least 20 hospitalizations during the seven-calendar period (an annual average of at least 11 hospitalizations).

Hospitalization diagnoses analyzed in this report reflect the principal diagnosis cited on the billing record.

The billing record's designation of the patient's race/ethnicity is based on self-identification and can only be obtained from the patient, relative, or friend; hospital personnel are instructed not to categorize the patient's race/ethnicity based on judgment.

Calculation of Age-Adjusted Rates of Death and Hospitalization

Age-adjusted mortality and hospitalization rates involving all age groups combined were used to make comparisons between racial/ethnic groups. These rates account for differences in the age distribution of the race groups by applying the age-specific rates of the standard population to the race-specific populations. The 1990 Wisconsin population constituted the standard population. Computations for these age-adjusted rates were as follows:

1. Within each diagnosis (first-listed diagnosis at discharge from hospital, or cause of death), age-specific rates for the standard population were calculated by five-year age groups (less than one year old, ages 1-5, 6-11, 12-17, 18-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85 and over), and for the population as a whole. For example, the age-specific rate of cancer deaths for people between the ages of 60 and 64 was found by dividing the annual average number of deaths (1,061) by the population aged 60-64 (208,986) to obtain a rate of 507.7 deaths per 100,000 population. Comparable calculations were made for each of the remaining 17 five-year age groups. The overall crude rate for the standard population was found by dividing the total annual number of cancer deaths (9,923) by the total population (4,891,769), which yielded a cancer mortality rate of 202.9 per 100,000 population.

2. These age-specific rates were applied to the race-specific populations using the same five-year age groups to yield the expected number of events (hospitalizations and deaths) for each age group and race combination. To find the expected number of cancer deaths for African Americans aged 60-64, the cancer mortality rate obtained above for people aged 60-64 (507.7) was multiplied by the African American population between 60 and 64 years of age (5,690), which yielded 29 expected deaths. This procedure was repeated for each of the remaining five-year age groups and race combinations.

3. The expected numbers of events were summed across all age groups to produce the total expected number of events for each race group. Summing over the 18 five-year age groups for African Americans, a total of 201 cancer deaths would be expected in a given year based on the 1990 age-specific rates in the standard population.

4. The actual number of events was divided by the expected number to create a ratio of the actual number of deaths (or hospitalizations) to the expected number of deaths (or hospitalizations) for each race. A ratio above 1.00 would indicate that there were more events occurring than would be expected if that race

group, given its age distribution, experienced the age-specific rates of the standard population. For example, the actual number of cancer deaths for African Americans (287) was divided by the expected number of deaths (201) to yield a ratio of 1.43.

5. These ratios were then multiplied by the overall crude rate of the standard population to derive the age-adjusted hospitalization and mortality rates for each race. For African Americans, the age-adjusted cancer mortality rate was calculated by multiplying the ratio (1.43) by the age-specific rate for the entire population found in Step 1 above (202.9), which yielded an age-adjusted cancer mortality rate of 289.4 deaths per 100,000 population.

Family Health Survey

The Wisconsin Family Health Survey conducts telephone interviews with a stratified random sample of households across the state. One person in each household, who is most knowledgeable about the health of household members, answers the questions on behalf of all household members. Interviews are conducted each month of the year, totaling about 2,400 households at the end of the year. Statistical weighting is applied to the annual data set so that it represents the entire Wisconsin household population. The Family Health Survey is a survey of Wisconsin households, and thus does not include persons living in institutions such as nursing homes, college dormitories, and prisons. The survey asks about health status, recent illness, use of health care services, and health insurance coverage.

For this analysis of minority health, Family Health Survey data from the years 1989-1991 were combined to yield a sufficient number of cases to permit making estimates for the comparatively small minority populations in Wisconsin. A total of 17,521 persons from infancy through age 64 were included in the sample over the three-year period; this total included 629 African-Americans, 301 Hispanics, 164 Asians, and 116 American Indians.

Further information about the Family Health Survey is available in the report, *Wisconsin Family Health Survey 1992*, available free of charge from the Center for Health Statistics.

Behavioral Risk Factor Survey

As part of an on-going national surveillance system designed and funded by the U.S. Centers for Disease Control and Prevention, the Wisconsin Behavioral Risk Factor Survey has been conducted every year since 1984. About 1,200 telephone interviews are completed annually with a randomly-selected sample of adults (age 18 and older) living in Wisconsin households. The survey asks adults about a variety of risks to health, such as smoking, drinking alcoholic beverages, obesity, hypertension, and nonuse of seatbelts. Cases are weighted each year so the sample represents the estimated age and sex distribution of the adult household population.

For purposes of the Behavioral Risk Factor Survey analysis presented in this report, data from the years 1987-1991 were combined to yield a sufficient number of cases to permit making estimates for the African-American and Hispanic populations in the state. The total sample for 1987-1991 was 5,212 persons aged 18-64, which included 199 African-Americans and 85 Hispanics. Even after combining five years of data, there were still too few cases to make estimates for the American Indian and Asian populations in the state.

Further information about the Behavioral Risk Factor Survey, including question wording, sample design and weighting procedures, is available from the Wisconsin Center for Health Statistics.

Confidence Intervals for Percentage Estimates from Sample Survey Data

Estimates based on a random sample, such as those from the Family Health and Behavioral Risk Factor Surveys, will generally be close to, but not exactly the same as, the "true" percentage. The smaller the sample, the larger the potential difference between the sample estimate and the true population prevalence. Some of the estimates presented in this report are based on fewer than 100 cases. This means that the actual prevalence in the total Wisconsin minority population may differ from the survey estimate that is presented in this report. Researchers use a confidence interval (range of values) to indicate the possible variation in a sample survey estimate.

The following table enables the reader to estimate a 95 percent confidence interval around any percentage presented in the text, using the number of cases in the sample (this number is included in each table where sample data are presented). A 95 percent confidence interval around an estimated percentage means there is a 95 percent chance that the actual percentage is within the calculated interval.

For example, it is reported that 51 percent of black males aged 18-64 were cigarette smokers, based on a sample of 70 men. The table shows that, for a sample of 75 persons and an estimated percentage of 50 percent, the confidence interval is 11.3 percentage points above or below 50 percent. We can say, with 95 percent confidence, that the percent of black men ages 18-64 who were smokers was between 39.7 and 62.3 percent (51 percent plus or minus 11.3). All percentages should be rounded off to whole numbers (to avoid false precision), so the 95 percent confidence interval would be between 40 and 62 percent.

Table. Plus-Minus Range of 95 Percent Confidence Intervals for Estimated Percentages

	Estimated Percentages					
Sample Size	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
50	6.0	8.3	11.1	12.7	13.6	13.9
75	4.9	6.8	9.1	10.4	11.1	11.3
100	4.3	5.9	7.8	9.0	9.6	9.8
200	3.0	4.2	5.5	6.4	6.8	6.9
300	2.5	3.4	4.5	5.2	5.5	5.7
500	1.9	2.6	3.5	4.0	4.3	4.4
750	1.6	2.2	2.9	3.3	3.5	3.6
1,000	1.4	1.9	2.5	2.8	3.0	3.1
2,500	.9	1.2	1.6	1.8	1.9	2.0
5,000	.6	.8	1.1	1.3	1.4	1.4

The true, or population, percentage value is very likely (95 percent probability) to be within the confidence intervals indicated in this table. Confidence intervals were computed assuming simple random sampling.

Wisconsin Cancer Reporting System Data

The Wisconsin Cancer Reporting System (CRS) began systematic collection of data from hospitals statewide in 1978. Besides case reports from all Wisconsin hospitals, the 1988-1990 data analyzed in this publication also include case reports for Wisconsin residents from cancer data systems in Iowa, Michigan, and Illinois.

The CRS report form contains demographic, diagnostic, and treatment information for each newly diagnosed or admitted cancer case. Reports are edited for completeness, logic, and intra- and interrecord consistency. Any questions are referred to the reporting facility.

Race designations are reported by participating facilities. In 1988-1990, the data reporting period analyzed for this report, no race was reported for 2 percent of the cases. For deceased patients with no reported race, the race specified on the death certificate was used. A probabilistic model using sex, residence, primary site and age was used to assign race to the remaining cases to calculate age-specific rates. Similar conclusions would be drawn using cases with known race only or assignment of race on the assumption the distribution of race is identical to that of known race.

Population numbers for calculated population-based rates are from the 1990 U.S. Census.

The date and cause of death and usual occupation of the deceased are from death certificates filed with the Center for Health Statistics. The number of months survived for patients who died from their cancer was calculated from the dates of diagnosis and death.

An annual report, *Cancer in Wisconsin*, includes detailed technical information about the Cancer Reporting System, as well as tabulations of newly diagnosed cases and deaths that occurred during a given year.

Communicable Diseases Reportable to the Division of Health

Physicians are required by Wisconsin statute to report cases of certain communicable diseases to the Wisconsin Division of Health. Numbers of reported cases presented in this report were obtained from the Communicable Disease Section of the Bureau of Public Health, Wisconsin Division of Health. Completeness of reporting varies among diseases. Specific counts for a year are subject to slight changes over time as medical tests reveal previously unidentified cases or change previous diagnoses.

Staff in the Communicable Disease Section can be contacted at (608) 267-9003 for further information on reportable diseases.

POH 5162
(11-93)